Vaikunthanath Das Kaviraj

Homeopathy for Farm and Garden

The Homeopathic Treatment of Plants

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4th revised edition

Vaikunthanath Das Kaviraj

Homeopathy for Farm and Garden

Plant and Soil Problems and their Remedies

Vaikunthanath Das Kaviraj
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“This supreme science was thus received through
the chain of disciplic succession and the saintly kings
understood it that way.”
(K. D. Vyasa, Bhagavad Gita 4/2)
“Oh good soul, does not a thing,
when applied therapeutically, cure a disease
which was caused by the very same thing?”
(K.D. Vyasa, Bhagavad Purana 1/5/33)
“A crank is a man with a new idea – until it catches on.”
(Mark Twain)

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Preface

With this book Vaikunthanath Das Kaviraj has pioneered a radically new method of pest control for plants. Making use of his extensive experience as a homeopath, he has been able to draw parallels between humans and plants, so enabling him to transfer his knowledge to the treatment of plants. The results have been astonishing, encouraging him to undertake further studies and research in this area: this book is the fruit of his exciting and innovative work. He has been able to find suitable remedies for many problems in agriculture, so making it feasible for farmers to use considerably reduced or even zero input of herbicides and insecticides.

The result is that the health of the plant organisms is evidently strengthened and the plants become “immune” to the disease agent, as shown by numerous experiments in South America. The harvest is increased so that the input of artificial fertilisers can be correspondingly reduced or even omitted altogether. Further remedies have been arrived at from observations and from the successful use of similar remedies. It has not yet been possible to confirm all these results with large-scale field studies, but a very encouraging start has been made, with further research sure to follow. So we encourage you to verify the efficacy of the remedies for yourselves, to start your own experiments, try out new remedies, and report back to us with your results. This will help us to update and improve this book, so adding to the sum of knowledge on homeopathic pest control in plants. In other words, the book is itself a living and expanding thing that we are sure will generate novel ideas and provide fresh impetus as the community of homeopathic plant users and experts grows ever larger. You can obtain the homeopathic preparations for the treatment of plants and soil described in the book either individually or as a set from Narayana Publishers.

Against a backdrop of increasing pesticide contamination of our foodstuffs and drinking water, and in view of the increasing impoverishment of our soil, this timely book on the use of homeopathy for fields and gardens inspires us with hope for a “velvet” green revolution and a viable alternative to the use and abuse of conventional pesticides and fertilisers in modern agriculture. For plant disease caused by bacteria, viruses, or fungi, through pest infestation to injury (due to replanting, for example), treatment with homeopathic remedies is a realistic alternative. This novel approach can be used not only by large-

scale agricultural operations to effectively husband their plants while saving costs and deploying an environmentally friendly treatment strategy, it is also eminently suitable for the hobby gardener, who is certain to find an astonishingly wide range of useful homeopathic plant treatments for those annoying problems nature throws up, from aphid infestation to an attack of fungus in fruit trees.

We wholeheartedly encourage you to contribute your ideas and experiences on the use of the homeopathic preparations described in the book by visiting our forum at www.narayana-publishers.com.

The Publishers

1. Foreword

Homeopathy for agriculture has advantages over any other method that may not be apparent at first sight. Switching to homeopathy in agriculture entails, however, a big farewell to a large amount of fossil-fuel consumption. We may therefore view such a switch as a conscious ecological choice. We are living in a time in which ecological awareness is slowly growing in the consumer community, although it has not yet penetrated the consciousness of the primary producers; and where it has, wide-ranging solutions have not yet been implemented. The logistics involved are seemingly insurmountable because it requires a change so radical that the idea alone sends shivers down the spine. It will entail a fairly rapid transition back to animal traction and smaller farms, the return of the farmhand and a slower pace of life. Some countries will have little difficulty with such a transition, simply because they have not yet emerged from such an economy. Other countries with greater dependence on fossil fuels will have a far greater problem to deal with. Their pool of working animals is far too small and the knowledge to handle animal traction is scarce. As examples we will take India, the countries of Europe and the USA.

In India, 80% of transport still goes by animal traction over the short haul. Farms are small and provide food for a local market. They often use animal traction for heavy work like ploughing and harvesting or transport. Such a society can adapt relatively easily to a life without fossil fuels, because it has not yet fully emerged from such a state.

Europe will have greater difficulty, because Western society is heavily dependent on fossil fuels. On the other hand, the new EU members are just emerging from an animal traction farming system and have both the animals and the knowledge to teach their brothers from the West. While such a transition will be harsh for the West in the first 15 to 20 years, they will soon enough catch up.

The USA is in the worst position, because her entire agriculture is completely dependent on fossil fuels. They have no animals useful for traction, no knowledge of how to run a farm with animals and their farms are far too big to enable efficient farming without fossil fuels. Of all the countries in the world they will be the worst affected.

Fossil fuel dependency is the greatest bane of agriculture as we know it. As geologist Dale Allen Pfeiffer points out in his article “Eating Fossil Fuels”, approximately 10 calories of fossil fuels are required to produce every 1 calorie of food eaten in the US. This ratio stems from the fact that every step in modern food production is fossil-fuel and petrochemical-powered: pesticides are made from oil and commercial fertilisers are made from ammonia, which is made from natural gas, production of which will peak about 10 years after oil.

With the exception of a few experimental prototypes, all farming implements such as tractors and trailers are constructed and powered using oil. Food storage systems such as refrigerators are manufactured in oil-powered plants, distributed across oil-powered transportation networks and usually run on electricity, which most often comes from natural gas or coal.

In the USA, the average piece of food is transported almost 1,500 miles before it gets to your plate. In Canada, the average piece of food is transported 5,000 miles from where it is produced to where it is consumed. A truck driver in the UK transports fish, which has arrived by plane from Pakistan, from London to Cornwall, where it is cleaned and packed in crates. Then it is transported to Scotland, where it is processed and canned, after which it is transported to London to be sold in supermarkets. Today, you buy noodles produced in Western China, transported to Shanghai, from where they are shipped to the EU or the USA. Those noodles have been halfway around the world before they even appear on your plate.

According to the Organic Trade Association, the production of one pair of regular cotton jeans takes three-quarters of a pound of fertilisers and pesticides. In short, people gobble up oil like two-legged SUVs.

Agriculture is possibly the most important industry mankind possesses, since it provides the food we all need in sufficient quantities. Yet agribusiness neglects agriculture and farmers, treating them as if they were commodities themselves that can be dealt with however it pleases them. Agribusiness is interested not in feeding the people but in making huge profits and satisfying the shareholders on the backs of the farmers. Agriculture needs to be taken out of the hands of agribusiness and given back to the farmers. Otherwise, they will decide what farmers grow and the consumer eats. They will decide which crops make profit and are worth growing. To give an example: Growing corn, canola or some other oil-producing crop to artificially make

diesel cars “environmentally friendly”, “carbon-neutral”, “sustainable” or whatever you want to call it, is both a misnomer and an oxymoron. The pollution remains the same, while taking arable land for growing food and driving up the price of food grains to levels the poor can no longer afford. This is an anti-social move, against the Declaration of Human Rights, and we must condemn it in the strongest possible terms. Therefore, agriculture is also in dire straits and for more than the reasons mentioned above, since it is extremely wasteful with fossil fuels and water, pollutes the groundwater and the wider environment and is therefore in need of a drastic overhaul.
Agriculture pollutes possibly more than industry, and the products used on the land are highly toxic in themselves. Moreover, to produce a kilo of meat, 10 litres of fossil fuels, 100,000 litres of water, and 16 kilos of grains are needed. Besides using chemicals instead of organic matter as fertiliser, the farmer uses toxic herbicides, pesticides and fungicides to grow and protect his crop against countless insect pests, diseases and fungi that attack his weak and obese plants. These fertilisers, herbicides, pesticides and fungicides are all made from fossil fuels and cause severe pollution in their own right. They all leach into the groundwater and rivers, which wash them into the seas, where they kill coral reefs, fish, amphibians and crustaceans, or make them dangerous to eat.
The poisoned insects are in turn poisoning the birds and small animals that eat them: the toxins enter the food chain in this way. The number of diseases derived from excess poisons on our food has not even been considered, let alone studied in any systematic manner. Yet some researchers have made the first steps in identifying which poison belongs to which disease. If we carry on in this manner, soon we will be flooded with new diseases and modern medicine will chase the accompanying germ as the culprit, leading to nothing but more suffering.
The modern push for genetic engineering is wishful thinking based on folly, since the “pesticide plant” already kills the greatest pollinators of all – the bees. Evidently, the pollen produced by such plants is toxic for bees too. Other genetically modified plants not modified with a pesticide generator restrict butterflies by poisoning the caterpillars that feed on them, which no longer reach the pupa stage. Butterflies are also important pollinators. It appears that such practices will rapidly lead to widespread famine, since we need the pollinators for most of our crops.

Diseased and pest-infested crops cannot absorb the full amount of CO_2 because diseased and infested tissues reduce their uptake by at least 50%. There is another 30% reduction in plants treated with pesticides and fungicides. When we consider that 30% of all crops worldwide are lost and more are affected, we see that this also adds to the atmosphere's woes. From IPM (Integrated Pest Management) it has become evident that plants treated with non-toxic control measures grow faster and more vigorously than their chemically treated cousins.

Moreover, if we are to reduce greenhouse gases, we need to reduce the use of fossil fuels. An agriculture that uses the Similicure method described in this book uses 50% less fossil fuels, now used to make pesticides, fungicides and herbicides, fertiliser and other substances worked into the soil. Such a reduction is phenomenal, and contributes to the reduction in CO_2. Hence the switch to the Similicure method will reduce greenhouse gases in more than one way. The final amount of CO_2 reduction will be in the order of 200%, when all things are considered.

A Quantum Leap

What is required is a revolution in our thinking. We have to remove the blinkers of linear tunnel vision and make the quantum leap to lateral vision. We have to learn that everything is part of a whole and therefore connected. We are as much part of it as everything else and what we do to each part we do to ourselves. We must realise that when we pollute our food, we can no longer have right thoughts – what you eat is what you are. This is not just a simple slogan without meaning but a profound insight. What do you want to be? Clean or poisoned? For that is the choice you have, as a consumer. You are the largest group and can enforce legislation, as the example from California – where 200 dangerous pesticides were banned by public demand – has shown.

Nature works through harmony – the so-called struggle for life is a hoax. While nature also entails the principle "eat or be eaten", food is never in excess, except in our food crops. They are by their very nature unnatural. Nature does not like excess and will redress the situation by creating sudden death – disease or pests. Hence to grow them without any damage we have to imitate nature to the point where she believes everything is in balance. Therefore, plants that help each other have been grown together since ancient

times, like tomatoes and basil, beans and potatoes, corn and potato and other plants and herbs. The same can be achieved by using these plants as remedies, since they have the same effects.

The Law of Similars is applicable throughout nature. Like produces like, cures like and attracts like in each and every respect. Therefore, it is easy to understand that like also imitates like and that like neutralises like. Applied to agriculture, this means that what grows naturally together will also work harmoniously in potency. Moreover, all natural predators can be used as remedies, following the same principle. The same goes for pheromones, allelopathy and allelopathic chemicals. Fungi and bacteria can also function in the same way. Thus a precise and accurate model of pest and disease control is available, without the drawbacks of resistance, pollution and added poisons or disease, or the subsequent need for stronger poisons.

The implications are that with homeopathic remedies, plants will not only be healthier and therefore increase CO_2 uptake, but they will also grow more vigorously, thus increasing the CO_2 uptake of the entire crop. In this way, a 100% increase may be achieved. Coupled with the reduction in fossil fuel use, the total reduction in greenhouse gases may approach 200%. This is the best solution for the reduction of CO_2 levels, together with the project to green the desert mentioned below. Since we can improve the uptake of CO_2 by 200% for 25% of the earth's surface and do the same with another 25% that consists of sick forests, we have already gained a tremendous advantage. In combination with the Greening of the Desert programme, we can increase the percentage of arable land and plant forests to sustain the arable land with sufficient rain and provide an ever larger percentage of CO_2 uptake. Of course it is self-evident that we must also put an immediate stop to unsustainable logging – not only in the Amazon, but equally in Australia, the USA, Canada and South East Asia. All forests cut down must be replaced – which in the case of the Amazon will be an enormous challenge. Otherwise any project that aims at reduction of CO_2 is simply an exercise in futility.

Elsewhere, we explain the need for and advantages of minimum doses of remedies suitable for the entire syndrome of symptoms before you. Here we deal with a different concept, where the whole is more important than its parts. We must go from the general to the particular, since we must first understand the whole before we can understand the functions of the parts.

When we look around us in nature we see that trees will give each other space to grow – they simply develop more branches out of the way of their neighbour. Each plant provides the biome for other plants, and we can recognise relationships between plants that share similar medicinal effects, pheromones, allelochemicals, tastes or other features. From these relationships we can learn how the whole works and how each creature has its place in the cycle.

Soil improvers are known in agriculture as manure, compost and slurry, which were traditionally produced at the farm and spread over the land. It was left to the worms to work them into the soil and the soil remained healthy.

With the beginning of the so-called Agricultural Revolution, chemical fertilisers were introduced, which seemed to do away with both the smell and the flies associated with manure and compost. It also appeared that the crops fared well from the regular inputsof fertiliser, which seemingly adapted to the lifecycle of the plants.

Potassium and nitrogen during the growing phase produced larger and stronger plants. Increasing the phosphorus content during flowering and fruitsetting seemed also to produce a bigger and better-looking crop. However, this increase occurred with a simultaneous loss of taste. The food produced ceased to be healthy. As in human society, where people became overweight from fast food, the plants became simply obese.

When pests and diseases subsequently increased, requiring ever-larger doses of poison, the food produced became literally dangerous to eat. Apart from excessive amounts of nitrogen, some compounds of which are carcinogenic, large amounts of poisons like DDT and the organochlorides were also consumed. This occurred despite best practices to avoid administering the chemicals during a specified period before human consumption (“withholding periods”) and the advice to wash fruit and vegetables thoroughly before consumption.

Rudolph Steiner was the first to see that bare soil cultivation with chemical fertilisers was the wrong way to proceed. He developed several preparations from cow manure (B500) and pure silica (B501) to improve the soil without the stink and the flies. His preparations restore soil microbial life, add the necessary nutrients in a form that plants can digest and improve soil structure. Here we would like to present some of his findings and offer the general

public the possibility to do away with chemicals in the garden altogether.

Consciousness: the Missing Link

Since consciousness lies at the root of all life, from the elemental to the complex, it is with consciousness that we have to approach the growing of crops. The Puranas (ancient Hindu scripts), describe how consciousness in living beings comes in four stages:

In seed form, consciousness is found in stone and rock. Diamonds are crystals that grow and growth is impossible without consciousness.

In plants, consciousness assumes the seedling phase. Here too, growth determines the conscious aspect.

In animals, consciousness is like a fully-grown plant, before flowering sets in. Animals have personality and the ability to learn, but not to philosophise or to think abstractly.

In humans, consciousness is like a plant in the bud. If humans come to self-realisation and unconditional love, the bud begins to bloom.

To those who argue that lower life forms have no soul and thus no consciousness, we offer the following free rendering of a conversation between King Bharadwaja and Sage Bhrigu, found in the "Mahabharata (a Sanskrit epic from ancient India credited to Vyasa that includes the Bhagavad Gita). Their arguments have been adapted to include modern terminology. The two men discuss these issues on the following lines:

> The Sage: *"The parallels are quite a lot closer than we may think at first. I mean, what it says in the human materia medica, how can it have any bearing on plant life? By seeing the plant in a similar manner as a human being. The plant has its mouth in the ground – the roots. At the junction of root and stem, where the former becomes the latter, we find the heart and the source of the circulation, which brings nitrogen up and sugars down. Digestion, respiration, vision, urinary organs and sweat glands are all in the leaves. So the plant is like a human being in many respects and suffers from similar diseases and parasites."*
>
> The King: *"Next you are going to tell me a plant has consciousness too. Trees have life, but they must be blind, deaf, without smell, taste and touch."*
>
> In response to the King's comments about the senses and the elements that belong to them, the Sage continued: *"You talk about the aggregate of the five Great Creatures, which create the material world and*

govern the senses that appertain to it. In the Mahabharata there is a nice story that illustrates why plants are more like us than you think."
King Bharadwaja was asking the Sage Bhrigu about the senses and the elements that belong to them.
The Sage: *"The ear partakes of the element of space, the nose of earth, the tongue of water, the touch of air or wind and the eyes of light or fire. All creatures, both mobile and immobile, are composed of these five Great Creatures."*
Bharadwaja had his doubts about the veracity of this statement and asked why these five elements are not visible in immobile creatures.
The King: *"Trees don't have any heat in their bodies. They have no motion and are made of dense particles. The five elements are not visible in them. Trees don't see, don't hear, have no smell or taste organs and cannot touch anything."*
The Sage: *"Exactly. That's what I think too. But you know as well as I do that trees do have a lot of space in them in the inter- and intra-cellular spaces. They always produce leaves, fruits and flowers and as a consequence they have heat in them too, causing the leaves to drop. They also get sick, wither and dry, showing they have a sense of touch, for how else can disease touch them? From the sound of wind, thunder and fire, fruits and leaves drop down, so the trees can hear and must have ears. What else is there to say about this? There is even a book, 'The Secret Life of Plants', which describes this consciousness."*
Bhrigu had a few things more to say too:
"A creeper winds its way around a tree, up and up, even if it has grown a distance away from the tree. It will seek out the tree without fail and then climb up its trunk. Blind things cannot find their way, thus proving that plants have eyes. Also, the leaves and flowers are held so that they follow the sun, catching as much light as they can throughout the day, proving trees have sight and movement. They bring forth flowers in due season as a reaction to certain scents, such as the burning of incense. They drink water by their roots and catch diseases, which can be cured by diverse means. This proves they have taste. They are susceptible to pleasure and pain, caused by weather and man, in cutting and breaking them; and they will grow anew, showing they have life. They suck up water and grow and become humid. If there were no water in trees,

then why does green wood generally not burn? So you see that the immobile creatures also partake of all the properties of all other creatures. Therefore, I say they are not too much different from humans, although similar states may look very different."

Modern findings, such as the ideas on the consciousness of plants expressed in Thompson and Bird's "The Secret Life of Plants" (1973), can be seen as an extension of such discussions. While Bhrigu may have used terms not acceptable to modern science, his exposition is rather scientific in my view. Similarly, we do not accuse Newton of using unscientific terms, although a modern formulation of the law of gravity may sound very different from his. Scientific language has also developed over the ages. We only have to look in "Black's Medical Dictionary", to see how terms have changed in the last fifty years. That this is due to more refined observational techniques, rather than to a better understanding, is of course conveniently forgotten. Yet in the same way that we have brought observational accuracy to the highest possible degree, the Vedic seers (Indian priests in the tradition of the Veda) calculated time from the atom and came up with an accuracy we have not even matched. Consciousness may be seen as the unifying factor, in that it is common to everything, even to what you and I designate as dead and inert matter. For even dead matter is the product of consciousness. A car is also the product of consciousness, like a table and a chair.

If we prepare an elemental or vegetable substance according to either the homeopathic method or the Steiner method, we discover a liberation of this consciousness, available in that element or vegetable matter. By adding these preparations to the soil, it becomes a harmonious living organism, which conveys this harmony to the plants that grow in it. The fruits we may harvest from such plants will add to our own harmony as well.

Healthy living is not just buying and eating good food. It is a complete and total concept, which includes the way we live and use the land. Whether for living, growing food or letting the plants remain wild, harmonious use of the land is of prime importance to our own survival. With these preparations we can create optimum conditions for growing food and living harmonious healthy lives. This frees up the time for us to contemplate the purpose we were put on earth for and to put this into practice.

According to Steiner, "the biodynamic preparations have the function of strengthening the plant's constitution.'' He seems to have considered the

plant constitution to be an entity of its own, applying to all plants, in an equal manner. This perhaps resembles the level of consciousness – seedling stage – that influences the general constitution. After all, we see the same in humans and animals, where the level of consciousness determines also the diseases these constitutions are prone to. However, within this general conscious constitution, there are further subdivisions, obvious from the enormous differentiation we find in the vegetable kingdom as well as the animal kingdom.

2. Introduction to the Second Edition

The enthusiasm with which the first edition of this book was received by the public – orders came in before the book was even printed – inspired us to excel ourselves to develop the book's underlying ideas into more than just a simple homeopath's dream. We were very happy to present the first edition of "Homeopathy for Farm and Garden". We felt it was a very satisfying achievement to present this revolution in agriculture to the general public, for we felt there was definitely an unmet need for this type of approach.

Having used the original version while teaching and researching at the Similicure School of Homoeopathy Research Department in India, we wanted to make the book more user-friendly. The alphabetical arrangement was somewhat cumbersome to use and we wanted to make it easier to find the correct remedy for each problem. The alphabetical arrangement is in some ways impractical, since it requires a great deal of searching in the book for the correct remedy for each problem.

For this reason, we asked the publisher to change the book's layout to make it more suitable as a practical reference work. Even the best layout will always fall somewhat short of perfection, but with its new look we have certainly made it much easier to use. We have also added many new remedies, giving you a better choice in selecting the proper one and enabling more specific treatment.

The remedies have been illustrated with small photos of the relevant pests, diseases or nutrient problem, so that identification has been made much simpler. All images are in full colour and we also provide a description of the pest.

Aphids are common everywhere and there are about 4,000 species worldwide, with around 250 identified as serious pests. Their appearance varies from transparent to glossy green, light green, lemon yellow, light brown, peach-coloured, pink, light red, blue, white and black. A range of aphid species all react to the remedy *Coccinella*.

However, some pests require specific predator remedies, depending on the particular plant infested by the prey species. For example, carrot whitefly require a remedy made from a different type of lacewing to the whitefly on

cabbage.
From these examples, it is clear that this edition will enable a more precise way of tackling and treating plant pests and diseases than anything that has been on the market until now. We hope the hobby gardener as well as the professional grower will take advantage of the possibilities offered here.
It is obvious that we have now something that is more robust and more useful than the smaller first volume. Whereas in the first edition we relied on orthodox reports and extrapolation, this present edition contains the fruits of many experiments conducted by ourselves and all those who have contributed from their own experience.
We would like to draw your attention to the fact that some remedies are mentioned in every chapter. This is not a repetition of what is in each, but we have collated the knowledge we have of each remedy in each different field of application.
Such remedies are called polychrests, since they cover a very wide and often opposing range of symptoms. There are many polychrests among the elementary substances, but also under the acids and salts formed by their compounds.
Silicea is one such example: it is a remedy for fungi, useful for treating pests and injuries, while as an eradicator of weeds it also provides green manure. The description of *Silicea* you may know from the first edition has now been subdivided under the separate headings of the new chapters in this book. Hence each chapter presents a different aspect of the remedy *Silicea*. There are several more that have been subdivided in this way, as they also cover different aspects of agricultural application.
Some remedies only have a single application, others are useful against both pests and diseases. Yet others may be active not only against these but may also be useful in nutrient problems and as a weed controller or soil improver.
We have introduced many new remedies useful against pests, most derived from Integrated Pest Management or IPM, without the disadvantages attached to biological control and at a fraction of the cost. We can now offer specific control for several pests, such as whitefly, cabbage fly, spider mite, red-legged earth mite and several others, with excellent results.
We have also introduced some new remedies for weeds, a subject we had almost completely neglected in the first edition, except for mentioning some possible remedies for this purpose. Since weeds are a great problem for all

farmers, but especially for organic or biodynamic farmers of whatever persuasion, we found it necessary to undertake the relevant research. While weeds formerly had to be removed by hand, remedies can now be applied with excellent effect, so avoiding the tedium of weeding.

Another important development concerns the classification of the remedies. Whereas initially we used the well-known remedies from the human materia medica extrapolated to plants, we soon gained new insights in this area which called this simple approach into question.

Of course some of these human materia medica remedies remain useful for plants, as our earlier discoveries indicated. However, plants face specific problems not found among the human population, such as particular insect pests, which require a completely different set of remedies.

Starting from scratch, the first remedy made of a predator – *Coccinella* – set us on the trail to try out more remedies made in the same vein. After all, for humans we also have a set of remedies for our specific diseases, like cholera and scarlet fever, to name but a few. These epidemics are visited upon plants in the form of pest attacks, which may and often do differ from one plant family to the next.

As with pests, diseases take different forms in different plants. While some diseases are visited upon several plant families, others restrict themselves to certain species only. This led to the classification of plants into constitutional types, according to their botanical groupings. Thus the *Cruciferae/Brassicaceae* and the *Gramineae/Poaceae* are two distinct constitutional types. They find their expression in the susceptibility to particular pests and diseases, depending on the soil and the climate of the biome. While both may suffer from aphids, the *Brassicas* are more prone to mosaic virus, while the *Grasses* are susceptible to yellow dwarf virus, glume blotch and ergot or smut.

Each requires its own set of remedies for pests and diseases. Some of those remedies – like the diseases – are not restricted to a single plant family.

Humans mainly use food plants from only a limited number of botanical families. These are the following:

Cruciferae/Brassicaceae
Cucurbitaceae
Gramineae/Poaceae
Labiatae/Lamiaceae

Leguminosae/Fabaceae
Piperaceae
Rosaceae
Solanaceae
Most of our herbs come from the *Labiatae/Lamiaceae* family, while our fruits mainly come from the *Rosaceae* family.
Hence we are dealing with a limited number of constitutional types, which makes the work with plants a great deal easier than it looked at first sight.
The task of ordering such a profusion of possible remedies for so many possible crops appeared at first daunting, if not insurmountable. Even in the first edition there are only hints at some of the concepts we present here in a reasonably conclusive form.
Assuming the similia principle to be at work, we concluded that the remedies of a plant family must be effective on food plants that belong to the same plant family. From tests in the field we discovered this is indeed the case, which has made the finding of a remedy for a particular problem even easier. What seemed difficult at first glance has been greatly simplified by the strict application of the similia principle.
The different diseases and pests of food plants are therefore likely to differ in each plant family. Hence it is possible to extrapolate from the problems the precise remedies that will solve those problems.

Relationships

The final addition is a listing of the relationships between the remedies, according to the current state of knowledge. The information under the following headings is valid provided the symptoms agree:
Antidote to: the featured remedy will counter the action of the remedies listed.
Antidoted by: the remedies listed here will counteract the featured remedy.
Compare: lists remedies with very similar action to the featured remedy; the same remedies often also work as antidotes.
Complementary: the remedies listed here will complete action begun by the featured remedy or provide complementary constitutional treatment.
Follows well after: the featured remedy often proves helpful when administered after the remedy or remedies listed.
Inimical: if the featured remedy has worked well, these remedies will tend to produce negative reactions if given subseuently. This must of course be

avoided at all times.

Feedback

We would greatly appreciate reader comments and feedback, which we will endeavour to incorporate in later editions of this book.

This is the beginning of a revolution in agriculture and the developments look extremely promising. We are hard at work to verify all the indications set forth in the second edition on large-scale agricultural plots, under all possible circumstances. The remedies have, in our view, exactly those characteristics which distinguish them from chemical agriculture – they are efficacious, safe, ecologically harmless and do not lead to resistance, while also providing the cheapest possible means to maintain the farm and garden in optimum condition for growing plants for food, pleasure or other reasons.

We strongly encourage all readers to record their observations and to send them in to us. The experience and knowledge collected in this way will help us to expand and improve future editions of this book.

Of course the book has become bigger and therefore more expensive. We feel it is well worth its higher price, since its usability has increased considerably, while also offering more than twice as many remedies and more extensive knowledge compared to the first edition.

Finally I apologise for any discrepancies or errors that may have crept in despite scrupulous editing. I express the hope that the book may serve the homeopathic fraternity and all those interested in growing plants, whether for pleasure or for a living, in the manner intended.

3. Foundation

Easily Understandable Homeopathic Principles

In order to understand what homeopathy entails, it is imperative to know its fundamental principles. In the following pages I will lead you through these principles, which will guide you when treating plants, including commercial crops. The same principles apply to the treatment of people and animals as well as plants, since they are based on natural laws that are applicable throughout nature and on all its great variety of creatures. Even Mother Earth herself can be treated, but her bulk and size demand an approach focused on the specific local habitat.

These quintessential concepts are easily understandable and underpin the practical examples offered in the chapters on homeopathic treatment, based on experience. They follow nature's cyclical patterns and involve the "originating intelligence". They convey truths based on scientific ideas rather than speculative hypothesis. They are as valid now as when they were first formulated by Samuel Hahnemann, the founder of homeopathy. This German physician followed in the footsteps of three other epoch-making figures in the history of medicine. We may call these four figures the Acharyas of medicine, a Vedic term for a spiritual teacher.

Hippocrates, the Observer, introduced the art of clinical observation as the necessary foundation for pathological diagnosis. The work of Galen, the Disseminator, ensured the teachings of Hippocrates and other ancients spread with powerful authority throughout the medical world. Paracelsus, the Assailer, was a staunch critic of sloppy thinking, applying chemical as well as physical analysis to the practice of medicine. Finally, Hahnemann, the Experimenter, gave us the greatest gift of all - a fully developed scientific system of healing, involving the quantum leap of vision and paradigm shift mentioned in the Foreword and discussed further below.

Awareness and understanding of the following six basic concepts will enable you to apply them effectively for plant treatment:

A. The Cause and Cure of Disease
B. The Law of Similars
C. The Single Remedy
D. The Minimum Dose
E. The Art of Diagnosis

F. The Totality of Symptoms

After outlining these guidelines in general and explaining how to implement them for plant treatment, this section concludes with a summary of the homeopathic method. The remainder of the chapter has a range of discussion points on plant treatment and homeopathy in general.

A. The Cause and Cure of Disease

This is how Hahnemann sums up the aims of his integrated and rational approach to medicine :[1]

> *The physician's highest and only calling is to make the sick healthy, to cure, as it is called.*
>
> *The highest ideal of cure is the rapid, gentle and permanent restoration of health; that is, the lifting and annihilation of the disease in its entire extent in the shortest, most reliable and least disadvantageous way, according to clearly realizable [inseeable] principles.*
>
> (Organon §§ 1-2)

He explains that "a genuine practitioner of the medical art" must have knowledge and awareness of the following:

1. What is to be cured in diseases – discernment of the disease, the indicator
2. What is curative in medicines – knowledge of medicinal powers
3. How to apply this medicinal knowledge to the indicated disease – clear principles
4. What is the appropriate remedy adapted to the case – selection of the remedy
5. How to prepare the medicine and give the exact amount required – the right dose and properly timed repetition of doses
6. What obstacles to recovery may exist, and how to clear them away
7. What things disturb health, engendering and maintaining disease, and how to remove them from healthy people

By applying this knowledge in practice, health may be permanently restored in the sick, and sustained in those who are well.

(Organon §§ 3-4)

Hahnemann and Kent stress that we cannot know the ultimate causes of disease, which are inevitably hidden from view:

> *Causes exist in such subtle form that they cannot be seen by the eye.*
>
> *There is no disease that exists of which the cause is known to man by*

the eye or the microscope. Causes are infinitely too fine to be observed by any instrument of precision. They are so immaterial that they correspond to and operate upon the interior of man. They are ultimated in the body in the form of function- or tissue-changes that finally are recognised by the eye.

(Kent, Lectures on Homoeopathic Philosophy)

Therefore disease … is not what allopaths believe it to be. Disease is not to be considered as an inwardly hidden Wesen *separate from the living whole, from the organism and its enlivening* dynamis, *even if it is thought to be very subtle. It is this absurdity that has for thousands of years given to the hitherto system of medicine all those ruinous directions that have fashioned it into a truly calamitous art.*

(Organon § 13)

Thus, rather than being a distinct entity in itself, disease arises solely because the vital energy of the organism is disturbed:

A natural disease is never to be regarded as some noxious matter situated somewhere inside or outside the person.

(Organon § 148)

Conventional approaches aim to eradicate disease as a supposed separate and direct cause. In what I call "chemical agriculture", massive doses of highly toxic substances are applied to combat specific plant pests and diseases. Hahnemann says the following about such practice, described as "antipathic treatment" or the use of "opposing" medicines:

This is a very faulty, merely symptomatic treatment wherein only a single symptom, thus only a small part of the whole, is one-sidedly provided for. It is evident that aid for the totality of the disease, which is alone what the patient desires, is not to be expected.

(Organon § 58)

And further:

Had physicians been capable of reflecting upon such sad results of opposed medicinal application, they would have long since found the great truth: the true, enduring curative mode must be found in the exact opposite of such an antipathic treatment of disease symptoms.

(Organon § 61)

Hahnemann continues in this paragraph by pointing out that such treatment brings only temporary relief, invariably followed by aggravation. The results

of modern agricultural practice confirm Hahnemann's observation. The amount of chemicals used is massive and the build-up of resistance to diseases and pests is one of the consequences. From this perspective, the prevalent ideas within agricultural science are at best not very rational, and at worst entirely faulty.

As Kent notes:

> *We daily see that the antipathic and heteropathic methods have no permanence. By these means there are effected changes in the economy and changes in the symptoms but no permanent cure, the tendency being simply to the establishment of another disease, often worse than the first and without eradicating the first.*
>
> (Kent, ibid.)

In homeopathy, by contrast, we focus on the disturbances affecting the plants themselves. We view the problem laterally, addressing the underlying cause within the organism itself, as expressed through the symptoms it triggers and tackling "obstacles to recovery" impeding a return to health.

As explained earlier, the real reason for pests and diseases is inherent weaknesses combined with unnatural stress, caused by unsuitable growing conditions, including problems created by incorrect spacing, bare soil cultivation and reliance on chemical methods of feeding and pest and disease control, as well as acid rain.

With homeopathic treatment instead of targeting the disease, the centre of investigation is the patient that is suffering, whether person, plant or animal. To understand what needs to be cured, we must carefully examine the complete picture of the disease in terms of all the symptoms expressing departure from health, then match this "symptom totality" to the single individual medicine that most closely resembles it, the "simillimum", following the Law of Similars.

B. The Law of Similars

Hahnemann traces the Law of Similars back to Hippocrates, although there are references to this concept in ancient writings such as transmissions of Vedic traditions in India, perhaps from as early as 5,000 years ago. The "Bhagavata Purana", for example, expresses this idea:

> *O good soul, does not a thing, when applied therapeutically, cure a disease which was caused by that very same thing?*
>
> (K. D. Vyasa, Bhagavad Purana 1/5/33)

Hahnemann distinguishes his homeopathic approach based on the Law of Similars from "allopathic" or "heteropathic" methods which follow the Law of Contraries or Opposites, or sometimes no law at all:

> *There are just two main modes of medical treatment, the homeopathic and the allopathic. The homeopathic model bases all that it does on the exact observation of nature, careful experiments and pure experience. … The allopathic (or heteropathic) mode does not do this.*
>
> (Organon § 52)

This law of "like curing like" means that in order to permanently cure a disease, a remedy must be capable of causing the very same symptoms it is prescribed to treat:

> *The curative capacity of medicines therefore rests upon their symptoms being similar to the disease. … Each single case of disease is most surely, thoroughly, rapidly and permanently annihilated and lifted only by a medicine that can engender … a totality of symptoms that is the most complete and the most similar to the case of disease.*
>
> (Organon § 27)
>
> *Neither in the course of nature …, nor by the physician's art, can an existing suffering or ill-being be lifted and cured by a dissimilar disease potence, be itever so strong, but solely by one that is similar in symptoms … according to eternal irrevocable natural laws.*
>
> (Organon § 48)

He also notes in his criticism of "isopathy" the difference between prescribing an identical substance (for example, by introducing unaltered "morbific matter") and the "simillimum" which constitutes what is most similar to the disease. This very similar remedy stimulates the organism to react, and in doing so it is able to overcome these same symptoms:

> *Medicines only become remedies … capable of annihilating diseases, by arousing certain befallments and symptoms … thereby lifting and eradicating the symptoms already present.*
>
> (Organon § 22)

These conclusions were not hypothetical conjectures, but based on repeated observations during scientific experimentation by Hahnemann and his colleagues. Hahnemann was well aware that there was no known explanation of why or how this happened, and the perceived lack of a scientific rationale for the "mechanism of action" of homeopathy remains a significant obstacle

to its acceptance. (Some suggested theories offering scientific foundations for dynamic homeopathic potencies are offered below.) However, practical experience and confidence in the reliability of his experimental methods prompted Hahnemann to set out his system for the relief of human suffering, despite fierce opposition.

> *This natural law of cure has authenticated itself … in all pure experiments and all genuine experiences; therefore it exists as fact. Scientific explanations for how it takes place do not matter very much.*
>
> (Organon § 28)

He carefully tested individual substances on healthy human volunteers in so-called "provings" (from the German Prüfung, meaning "test"), recording the results in detailed homeopathic materia medica (remedy information) listing their effects. These same lists also represented the symptoms which could be cured by each substance, provided it was administered singly, in suitably small doses.

C. The Single Remedy

This aspect should be given the utmost attention in terms of plant treatment, since it is often neglected in the treatment of humans, even among some of the homeopathic fraternity. This is the absolute necessity of administering only one remedy at a time.

> *In no case of cure is it necessary to employ more than a single simple medicinal substance at one time with a patient. For this reason alone, it is inadmissible to do so.*
>
> (Organon § 273)
>
> *It is wrong to use complex means when simple ones will suffice.*
>
> (Organon § 274)

D. The Minimum Dose

Although other physicians had followed the Law of Similars, Hahnemann's introduction of the process of potentisation, to achieve a minimum dose, was unprecedented. Again, experimental trials led to this unique discovery, involving dilution and vigorous agitation (succussion) of ground or dissolved substances following strict and specific criteria, still used today in homeopathic pharmacies.

In his "Philosophy Lectures", Kent highlights this method as follows:

> *Then it is not sufficient merely to give the drug itself, regardless of its form. It is not sufficient to give the crude drug, but the plane upon*

which it is to be given is a question of study. In a proving the crude drug may bring forth a mass of symptoms in one prover, but when a person is sick, those symptoms will not be touched by the crude drug.

(Kent, ibid.)

As plants are sensitive living beings, usually with small bodies (with the exception of trees) the necessity of the minimum dose cannot be stressed enough. As the power of a medicine increases with the reduction in quantity, if prepared according to the homeopathic method, it follows that the quantity given must diminish proportionately to the increase in potency.

A medicine … that is given in too large a dose, does much more damage… In strong doses, the more homeopathic the medicine is to the disease state, and the higher its potency, the more damage it will do … Too large doses … give rise to great misfortune, especially if … frequently repeated.

(Organon § 276)

Routinely prescribing repeated doses is not good practice, as indicated above. Hahnemann continues:

Not seldom, they endanger the patient's life or make his disease almost incurable.

(Organon § 276)

Hahnemann further warns against repetition of the dose in the "Chronic Diseases" (reprint 1995) where he states the following:

(The medicines)… given in the most appropriate doses, were the less effective the oftener they were repeated. They served at last hardly even as weak palliatives.

(Hahnemann, Chronic Diseases)

When describing the particular administration method for the highest LM potencies, he notes that:

The same well-chosen medicine <u>can</u> now be given daily, even for months <u>when necessary</u>.

(Organon § 246, footnote 1, my emphasis)

Note that "can" and "if necessary" are the operative words here and practitioners would do well to heed them, for plants as much as for people. Boenninghausen's article on "The Value of High Potencies" expresses support for the following statements by Fincke:

For a scientific establishment of the curative power and efficiency of

the high potencies, we cite the well-established law of nature, discovered by Maupertuis and mathematically proved by him; this we apply to therapy. This is the law of the least effects, by others called the Lex parsimoniae. *The discoverer stated it in the following words: "La quantité d'action nécessaire pour causer quelque change ment dans la nature, est la plus petite qu'il soit possible," i.e. the quantity of action necessary to produce any change in nature, is the smallest that is possible.*

(Fincke, cited in Boenninghausen, Lesser Writings, reprint 2007)

Boenninghausen goes on to agree with Fincke's view that:

This law of effects (de minimus maxima) appears therefore to be an essential and necessary complement to the law of homeopathy (similia similibus) and to occupy a similar place with it.

(Fincke, cited in Boenninghausen, ibid.)

In another article, "Three Precautionary Rules of Hahnemann" he also cites two quotations from Hahnemann's "Chronic Diseases":

If these … medicines do not act out their full time, while they are still acting, the whole cure will amount to nothing.

The fundamental rule in this respect remains. To allow the dose of the medicine selected … to complete its action undisturbed, so long as it visibly furthers the cure … a process which forbids every new prescription … as also the repetition of the same remedy.

(Hahnemann, Chronic Diseases, cited in Boenninghausen, ibid.)

I do not think that further quotations are required to impress upon the reader the necessity of using the single remedy and the minimum dose in plants, as this is plainly obvious from the writings of the old masters. Advice on how and when to administer homeopathic remedies is given within each section of the book.

E. Approach to Diagnosis

Effective diagnosis of a disease or health problem needing treatment requires a firm basis and homeopaths have used a seating analogy to express this. A stool with only two legs will not stand up: a minimum of three points of confirmation are needed for a viable diagnosis. If the seat has four legs and a backrest, support will be all the stronger. Five key points underpinning diagnosis for plants are as follows:

1. Soil

2. Weather
3. Nutrients
4. Flora and fauna
5. Biome or habitat

It is a quintessential truth that we must understand these five factors before we can make anything more than an educated guess about what is wrong. Lab reports and evidence from microscopic examinations may supplement these, but they are like the armrests of a chair: although they may look impressive, they are optional extras, rather than forming the main structure, and are not essential for clear assessment.

A good observer has five senses available to help diagnose problems:

1. Ears
2. Eyes
3. Nose
4. Tongue
5. Skin

With these senses, you can observe everything you need to know about the case at hand, so that you can diagnose and treat objectively, bearing in mind that:

> *Diseases are nothing other than alterations of condition in healthy people [or plants] which express themselves through disease signs.*
>
> (Organon § 19)

F. The Totality of Symptoms

Hahnemann explains how homeopathic diagnosis specifically involves an assessment of the complete symptom picture:

> *It will help the physician to bring about a cure if he can find out … the most significant factors in the entire history of a protracted wasting sickness, enabling him to find out its fundamental cause. … In these investigations, the physician should take into account the patient's discernible body constitution … mental and emotional character … occupations, lifestyle and habits … age, sexual function, etc.*
>
> (Organon § 5)

Kent gives us the following description of this totality of symptoms:

> *The "totality of symptoms" means a good deal. It may be considered to be all that is essential to the disease. It is all that is visible and represents the disease in the natural world to the eye, the touch and*

external understanding of man.

(Kent, ibid.)

Particular attention must be given to the plant in its habitat, especially with pot plants. The type of soil, the relative size of the pot and the plant, the proximity of inimical plants, its position with regard to light and any other factors that may influence the action of a remedy must be considered. Of course these factors should not be neglected in freestanding plants either.

The unprejudiced observer, even the most sharp-witted one … perceives nothing in each single case of disease other than the alterations in the condition of the body and soul, disease signs, befallments, symptoms, which are outwardly discernible through the senses.

(Organon § 6)

Human patients can be questioned, but with plants we must rely mainly on the evidence of our senses in order to determine these changes from a normal state of health. As mentioned above, plant pathology reports, chemical analysis of soil nutrient levels and microscopic evidence of pests and disease agents may supplement the art of observation which gives the bulk of the symptom totality.

In cases of disease where there is no obvious occasioning or maintaining cause … to be removed, we can perceive nothing but the disease signs. Therefore, it must be the symptoms alone by which the disease demands and can point to the appropriate medicine for its relief … Thus … the totality of symptoms must be the most important, indeed the only thing in every case of disease, that the medical-art practitioner has to discern and to clear away.

(Organon § 7)

It is not conceivable … after the lifting of all the symptoms of the disease and of the entire complex of perceptible befallments, anything else besides health remains or could remain such that the diseased alteration in the interior would be left unexpunged.

(Organon § 8)

It is an undeniable truth that nothing can, by any means, be discovered in diseases whereby they could express their need for aid besides the totality of symptoms, with consideration for the accompanying circumstances.

(Organon § 18)

Nothing else is relevant to the treatment. Hahnemann concludes that:

> *The complex of all the symptoms and circumstances perceived in each individual case of disease must be the only indicator, the only reference in choosing a remedy.*

(Organon § 18)

Where specific factors combine to predispose plants to disease, such as excess levels of certain nutrients that trigger pest population explosions, or the presence of pests acting as disease vectors, these are included in the symptom totality:

> *If … the patient complains of a couple of severe ailments the investigating physician will usually find several collateral … befallments that give a complete image of the disease.*

(Organon § 151)

G. Summary of the Homeopathic Treatment Method

In short, then, the homeopathic approach to plant treatment involves the following procedures:

We examine by observing the pathology and its location (the organs or parts affected) comparing this to the normal physiology for diagnosis, prognosis and therapy. This includes consideration of the process of disease and its associated appearance or manifestations, such as inflammation, exudation, degeneration, necrosis, atrophy, hypertrophy, aplasia or hyperplasia.

We assess the aetiological factors that predispose to disease or excite it, in terms of development, trauma, infection or iatrogenic causes (resulting from incorrect treatment). These relate to how the disease develops, in which direction and at what speed.

We diagnose by matching all the pathological indications (the ‘totality of symptoms’) to similar pathological conditions associated with a single specific remedy, in accordance with the Law of Similars.

We decide on how best to administer the remedy to cure the problem. In severe cases, where cure is no longer possible, palliative treatment may be a noble and achievable aim. Homeopathic remedies may also be used for prophylactic treatment during epidemics, for hygiene and sanitation. Selected therapeutic applications on these lines are given in parts of the text, along with general advice on dosage and potency.

Hahnemann explains how any drug or remedy substance will always act on the human vital force:

> *Medicines could never cure diseases if they did not have the power of altering the state of health. Their curative power must be owing solely to this power they possess of altering the state of health.*
>
> (Organon § 19)
>
> *Every true medicine works at all times, under all circumstances, on every living being, and arouses in him its peculiar symptoms. These symptoms will be distinctly conspicuous if the dose is large enough.*
>
> (Organon § 32)
>
> *Each life-impinging potence, each medicine, alters the tuning of the life force more or less and arouses a certain alteration of a person's condition for a longer or shorter time.*
>
> (Organon § 63)

A. Remedies Prepared from Agricultural Chemicals

Plants and animals also possess this life force, and in plant terms, the agents impacting on plant health include herbicides, pesticides, fungicides and chemical fertilisers. We are led to believe that chemical treatment is harmless to the plant, despite the fact that a withholding period is imposed on crops that have been sprayed. It is considered prudent to allow time for potentially dangerous poisons to break down or wash off. In this light, the idea that the same poisons are nevertheless safe for the plants seems a rather illogical conclusion.

Examples of the alterations to plant health caused by administration of these substances are shown in photographs throughout the book. For instance, herbicide damage caused by indiscriminate application is illustrated in the chapter on Injuries; pictures indicating the results of both deficiency and excess of specific nutrients are also included in the chapter on Plant Diseases Arising from Nutrient Imbalances. Pesticides and fungicides cause similar adverse effects on plants, and all these influence the flora, fauna and pH of the soil. Soil pH can also become acidic after prolonged rains and this may cause plants to wilt and die.

Poison crucially depends on dosage, and it is especially the use of large doses which wreaks so much havoc. While glucose is a natural substance, excess amounts of sugar are clearly harmful: because sugar is not arsenic, many graves are full. Agent Orange was a synthetic product based on naturally

occurring plant growth hormones (auxins). The devastating consequences of its use during the Vietnam War are widely condemned, yet we allow farmers to employ experimental compounds on our food and happily use them with gusto in our own backyards. Many are ignorant of what goes into their food, accepting in good faith that agricultural practice is safe. Rigorous scrutiny of the effects of "chemical agriculture" benefits the general public and encourages the development of viable alternatives.

By studying the effects of the use and abuse of chemicals as well as diseases on the vital force of plants, we could also learn much about plant treatment. Hahnemann adopted a similar approach when he systematically investigated the symptoms caused by the drugs of his day:

> *One did not suspect that these histories of medicinal diseases would some day supply the first rudiments of the true, pure materia medica, which, from the outset up until now, consisted only in false conjectures and fabrications, and which was as good as non-existent.*
>
> (Organon § 110)

Note that the specific effects of each individual substance must be carefully noted:

> *Medicinal substances act in their morbid alterations of the healthy human body according to definite, eternal natural laws and, by virtue of these, are able to engender certain, reliable disease symptoms, each substance engendering particular ones, according to its peculiarity.*
>
> (Organon § 111)

Many toxins will adversely affect all carbon-based life forms with their similar metabolisms. It is also true that one person's meat may be another's poison. For instance, chickens and goats can eat the berries of *Belladonna* (deadly nightshade) – indeed they can consume entire plants without any untoward reaction – while five berries are sufficient to kill a dog. From this we can extrapolate that homeopathic *Belladonna* should not be used indiscriminately on carnivorous plants like *Drosera* or the Venus flytrap; for them it will be an unsuitable drug.

For homeopathic prescribers, information on the effects of agricultural chemical treatments helps increase our knowledge of substances that can be researched and employed to treat plant health problems on the basis of the Law of Similars, as described above. This book also includes examples of remedies prepared from plant pests, parasites and predators, as well as

companion and suppressive plants with allelopathic qualities, the latter especially for weed control.

B. Parasite, Pest and Companion Plant Remedies

Plants and humans are both prone to parasites and pests which sometimes carry deadly diseases. Humans may suffer from parasitical worms, scabies, lice, fleas, and mosquitoes, for example, carrying typhus, malaria and yellow fever among others. Similarly, plant aphids carry yellow dwarf virus, and there are a host of other pests that can disturb the life of plants profoundly. Following homeopathic principles, a substance which causes symptoms can cure the same symptoms, provided it fits the whole disease picture. In these circumstances, we may find useful new remedies made from potentised disease agents, given singly and in minimum doses, of course.

Kent sounds a note of caution when he says:

> *We know very well that in the old school [analogous to 'chemical agriculture'], there is no plan laid down for acquiring a knowledge of medicines except by experimenting with them on the sick. This Hahnemann condemns as dangerous, because it subjects the sufferers to hardship and because of its uncertainty.*
>
> (Kent, ibid. p 170)

This gives pause for thought in terms of experimenting with companion plants. A range of examples of these have been included in this book. It is recommended to use a single type of companion plant at a given time. Growing too many different types simultaneously could result in a type of "proving" (as described above) when the crop plant is bombarded by multiple influences, leading to the expression of symptoms. Repeated application of nutrients in large, crude doses is similarly not advisable. Hahnemann has the following warning about such continued inappropriate or multiple prescribing:

> *Incomparably more frequent than natural dissimilar diseases associating with and complicating themselves in the same body are those disease complications that the inexpedient medical procedure … tends to bring to pass through the protracted use of unsuitable medicines.*
>
> (Organon § 41)

C. Special Remedy Preparation Methods

When preparing remedies for use in plant treatment, some of the methods

recommended in this book differ from those used to create human remedies. In the case of the new plant remedy *Juglone*, for example, we do not extract and potentise the constituents of walnut leaves following the usual procedures outlined in our homeopathic pharmacopoeia. Instead, we obtain it by imitating the slow extraction processes in nature. Hence we put the leaves of the walnut in a 50:50 mixture of water and alcohol and leave it standing till almost all the leaf tissue has dissolved, shaking it twice a week for about a month. Only then is the substance potentised. In the same way, we obtain allelopathic substances from plants by washing them in water several times a day, mimicking the effects of rain, and potentising the liquid. After potentisation, the least possible physical residue remains.

Similarly, we can use remedies now employed only for crops to treat the wider environment affected by equivalent diseases or problems. Habitats have different requirements from humans or animals and therefore the remedies made for them must reflect these needs. Forests, like fields and gardens, have plant communities where some species like close company, while some avoid others completely. We may need to create different pharmacopoeias for different ecological zones. Steiner recommended that the pure tincture was put into 20 litres of water and used, and did not like the idea of going higher than 3X or at most 6X. This has the advantage of still containing enough ‘matter’ to satisfy orthodox critics or sceptics. However, my initial Swiss success saw almost instant results from a 200C and I have also used 30X extensively. From experience I have found that some remedies work better in lower potencies, others in higher potencies, depending on the plant and the situation. As explained in the chapter on Using Homeopathic Remedies, I general advise starting with 6X.

For plants and habitats, and especially for allelochemicals, it seems that remedies have maximum effect when obtained in the same form in which they are found in their natural setting.

There is no reason why such methods and remedies should not provide equally effective for human use too.

It is perfectly conceivable that we could make remedies for people with cravings for certain plant products from the plants themselves, their exudations, or fungi and bacteria that grow in the vicinity of the crop. This could potentially relieve malnourishment due to lack of this foodstuff.

Such lateral thinking was originally stimulated when I first examined the rust

on those fruit trees in Switzerland that brought me to the remedy *Belladonna* and consequently the entire concept of homeopathic plant treatment. An allelochemical may prove to be very useful in the treatment of infertility of any creature, since it inhibits germination of weeds. Using the sure and steady guide of the Law of Similars, an eternal truth impossible to refute, remedies work in a similar manner at all levels, including plants, animals, humans and even our planet's habitats.

Suppression and New Plant Diseases

In agriculture, we discover the emergence of "new diseases" as a regular occurrence, often supposed to be fungal, bacterial or viral in origin. Plant diseases tend to worsen year after year, despite efforts to breed so-called resistant crops. New diseases, actually the same old ones in disguise, keep cropping up. The problems are not solved, and the "solution" is a temporary stop-gap until the next poison is developed.

When agribusiness introduces a poison, microorganisms develop resistance as a matter of course, unless homeopathic doses are employed. Resistance is the result of suppression. Suppression breeds resistance at every instance and under all circumstances, because no living entity likes to be suppressed – human revolutions are caused in the same way.

Since genes are actually much less deterministic than agribusiness likes to suggest, the pest or disease organism has the ability to adapt its genes to the new situation and thus resistance becomes embedded in the following generations. It is this factor which explains the re-emergence of existing diseases in new forms. (There is further information on the relations between genes and their environment in the section Genes and Feedback Loops below.)

Any disease that is suppressed will necessarily disguise itself so that it appears different. However, it is not different at all, but the same disease as before, simply expressing itself differently. As the French say: "Plus ça change, plus c'est la même chose", or in plain English: "The more things change, the more they stay the same." Therefore, disease is the master of disguise in the surrealistic Kabuki theatre of agricultural suppression – for every suppression, it reveals another mask. In this way, plant disease behaves exactly like human disease – suppress an itch and it may show up later as asthma.

Homeopathic remedies come in such small doses that they are not detected as

separate antagonists by the immune systems of pests and disease organisms. Instead, the plant absorbs the energy pattern of the remedy, and they merge into a single energy signature. The plant sends a message of danger or disgust, rather than signalling gourmet food; when would-be attackers detect this message, they have no choice but to stay away. In this way, we do not simply suppress disease symptoms, but seek to strengthen the defences of the plant itself.

In the same way, when we fight the insect world, we not only engage in a losing battle, but ultimately in an unwinnable war. Homeopathic remedies, on the other hand, work to support natural defences rather than launching an all-out attack. They help plants throw off that which is detrimental. This minimises friction, an expression of suppression, where one entity seeks to dominate the other in an abrasive manner.

Along similar lines, bare soil cultivation forces the subsoil flora and fauna to seek other means of sustenance than the normal organic debris they are designed to decompose. Their sole recourse and solace is the crop the farmer has planted, for that is the only organic material left in our half-dead modern soils. As long as there are still fungi and bacteria in the soil, we have a good chance of restoring balance, but this takes time. If soils are very poor, a gift of compost may trigger an initial explosion of fungi and bacteria. Having been starved for so long and constantly attacked by poisons, they literally mushroom in a population explosion. Hence very poor soils must be composted during the fallow period, allowing time for these populations to return to normal.

The Role of Experiments and Experience

A. Homeopathy and the Experimental Approach

It is through trials and experimentation that our knowledge of remedies is advanced and the scope of our practice increased, for the benefit of our crops. I explained in the second edition that uneven results with remedies made from insect pests led to more successful experiments with remedies made from predators, which solved the problems with pests adequately. The use of Acid remedies for weed control suggested previously has not proved fully successful in the longer term, so I no longer recommend them for this purpose. Some of our early experiments were conducted by those not familiar with homeopathy and from the resulting mistakes, at times exciting new phenomena were discovered. Some remedies were used repeatedly because of

re-infestation and this may have caused a form of proving. This re-infestation was especially marked in pot plants. This might be due to the fact that freestanding plants take up the remedy only for a short period, while the water in which they have been suspended leaches through the soil. In pot plants, this water collects at the bottom of the pot, which allows the plant much longer exposure to the remedy, so that a much larger dose is taken up. The concept of the minimum dose is thus violated, with the result that a proving is instigated.

Rather than discouraging us, these incidents point to the importance of repeated experiments with different plants and remedies, preferably under different circumstances. It also points to the necessity of provings, which I have not been able to conduct. It is after all a bit much to ask friends or commercial growers to part with the results of many hours of hard work merely to satisfy the curiosity of a homeopath.

Although in homeopathy we do not use complexes, interesting experiments can be instigated in which some of these remedies can be mixed in their crude form, from which a combination tincture can be prepared. This is similar to the process of production of a remedy, which is mixed in its crude form, after which the different potencies are prepared, for example *Hepar sulphur* and others. These are not complexes but simplexes.

This experimental approach began from the moment Hahnemann published his first edition of the “Organon”. In the veterinary field, for example, the early pioneers Lux and Jenichen applied homeopathy to animal treatment. In our own time, Day and McLeod have actively promoted homeopathic veterinary practice and published books on the subject in English. The German tradition has been particularly vigorous. For example, the homeopathic veterinary practitioner Spranger served German and Danish organic farms so well that in due course his role as a vet became “surplus to requirements”. In his guidance to farms he emphasised the need to stimulate self-regulation among the animals and the whole farm as a closed system. By paying close attention to nutrition, housing, chain control, handling methods and breeding procedures, as well as animal treatment, the functioning of the farm unit as a whole is optimised. If we observe the eating patterns and behaviour of animals themselves when they feel out of sorts, we can gain an incredible amount of knowledge helpful in treating them or understanding the difficulties they experience at different phases of their lives.

Under European legislation organically farmed animals must, where possible, be treated with homeopathic or phytotherapeutic remedies. Medicines which are compatible with organic farming have several advantages. It is difficult to imagine the authorities objecting much to the use of these same remedies on plants.

Self-regulation is also our aim in the plant world too. Just as with animals, paying careful heed to (natural) nutrition, spacing, growing, cross-breeding and propagation methods results in a win-win situation, with benefits to your wallet, health, those who buy or consume your produce and the immediate environment. The same benefits to wallet, health, food and environment apply to the rest of humanity, providing we can become aware of the dire necessity of maintaining the environment vital to survival of our own and other species.

B. Gaining Experience in Homeopathic Treatment

In plant treatment, experience pays off. A farmer or gardener with good knowledge of the diseases affecting crops can immediately recognise them as old acquaintances and readily match them with the relevant remedies, depending on the individual symptoms.

The difficulty for the beginner is building confidence and experience in dealing with plant diseases. Many of the diseases look similar; problems caused by fungi are not always distinguishable from those due to nutrient imbalances. Identifying insect pests poses difficulties, because when several species of insects are present in the field, it may be difficult to decide which is the one causing the problem. Thrips, for example, may look like rather drab flies or little moths, many pests hide underneath the leaves and some look rather similar to predators. Many insects are also vectors for disease and it may be hard to decide whether the disease was there before the pest or vice versa.

Beginners can start prescribing at a basic level, using remedies chosen for specific clusters of symptoms. At a slightly higher level, remedies are selected which correspond to specific plant typologies. Finally there is another level at which the choice of medication depends on both the unique situation and on the exact stage and nature of the stage in the disease process. At this level, the homeopathic doctor, vet or agro-homeopath is ideally looking for the most significant individual aspects of the particular human, animal or plant case. In agriculture, the homeopath will base their remedy

choice on their experience with growing crops and with the use of the remedies.

Particular traits, which only a few plants share, become significant because these are the most characteristic. Some pieces of information are thus more important than others. The homeopathic doctor may collect dozens of pieces of information on a single case. When all the information is collected and placed in order of precedence, the doctor selects the remedy which suits the case most precisely. In the case of plants, there are more than 500 homeopathic remedies to choose from; with animals or humans the practitioner selects from approximately 3500 remedies. The information in this book helps highlight some of the most common and significant remedies useful for both beginners and more experienced users.

C. Types of Experience

Many practitioners of complementary forms of medicine distinguish between knowledge obtained experimentally and that based on experience. Experience manifests itself in three different ways:

- historical knowledge/insights and ideas/methods passed down by earlier practitioners (often to be found in specialist literature)
- reflection during the practitioner's career on the knowledge accrued and their own experience with health, sickness, treatment, etc.
- information which comes to light during the process of treating the individual patient

Then there are those flashes of insight from intuition, where insight is gained through grace; these are rare and not experienced by everyone. The question is whether this form of therapy selection has any scientific legitimacy. The short and clear answer is yes! There are sufficient points of departure in the scientific literature to legitimise the use of experiential knowledge in addition to the protocol-based approach.

Experienced workers (experts) have learned more or less consciously to deal with the prevailing laws and situations in their field (expertise, tacit knowledge, clinical eye, craftsmanship or professional skill, green fingers, etc). In many cases this experience produces valid knowledge. This knowledge enables them to recognise "prototypical situations" based on pattern recognition, to see the present problems in this light and by having an overview of the situation and laws, to perform adequately and in accordance with the situation. Adequate knowledge of the prevailing laws, their sphere of

operation and how to apply them in different situations provides the opportunity for self-regulated learning, the adaptive use of skill across changing personal and environmental conditions.

All these aspects of homeopathic practice are brought to bear when treating plants as much as humans or animals. It requires that one has an interest in what grows in the garden, what difficulties a plant must meet in its life and its relations with other plants, insects and mammals in its direct environment. By looking at the whole, the different relations are at once visible, but the untrained eye must first learn to see the relevant features.

D. Old Wisdom and a New Future

There is increasing demand for "old" wisdom and experience. Only when we start looking at traditional farming methods from the less-developed world can we begin to improve the total environment, rather than simply focus-ing on individual problems. By looking farther afield at how companion plants work and by studying nature as a whole we come to see the interconnected web of life more as a symbiotic organism and less as a food-providing mechanism.

We must learn to see that everything we do to a crop is having effects on all aspects of its environment too, because after applying remedies, certain effects took place – sometimes positive, sometimes negative, but always as a result of a remedy. For instance, a dose of fertiliser also affects the other plants and living entities in the plant community. It may attract aphids or spider mites and repel useful predators. Even Integrated Pest Management (IPM) can be powerless to control aphid explosions as long as nutrient imbalances are in place. Therefore we must resort to Elemental remedies and their compounds to redress that imbalance.

Above all, we can learn much from nature, which always seeks to restore balance as soon as possible, using the least effort and energy. Nature has a particular quality of teaching, which is direct, immediate and always concise. Nature does not waste time, although her processes are gradual and take a while to become fully apparent. "Little by little" is Nature's motto and it requires intervals from several weeks to several years or even longer to observe the changes she makes.

To restore an environment that has been thoroughly altered is difficult for several reasons. We must first have either examples of the original habitat or thorough descriptions and photographic or other visual evidence of how it

looked. Then we have to either leave it to nature – as is possible in some habitats – or plant trees in massive amounts. In Australia, planting trees ought to be compulsory and the use of silica is warranted in most cases. Since the seeds need heat from fires to burst open and germinate, a bare landscape needs seedlings and monitoring for the first 6 months and sufficient surface area to make it worthwhile. By 30 years' time, the effects will be visible to all, but before that, it serves to have yearly inspections. Below a certain density and size, no forest is viable and for the Eucalypt species this is about 20,000 hectares (50,000 acres). Hence the desert can be greened properly only in blocs of such size, unless the expansion is continuous.

It is evident that I have, so far, gone no further than scratching the surface. What we see emerge underneath all the rubble is a beautiful adaptation of a natural principle in another field of application than the generally accepted or recognised one. I see an even greater future ahead for both homeopathy and agriculture than initially envisaged. It has developed beyond my wildest dreams and is, of course, far from finished. Homeopathy will be given more credibility as a scientific method and agriculture will be enriched with cleaner control measures. This will also be beneficial to the environment. The charges laid at our door concerning placebo effect can also no longer be upheld, as results from animal treatment have already clearly demonstrated. Evidence from plant treatment will constitute further proof that these charges are baseless. This field of work deserves to be explored to its limits and I hope that I have aroused sufficient curiosity in my colleagues, despite their busy practices, farmers of every persuasion, and last but not least, the public, for them to contribute to its expansion.

Farmers are known as a conservative lot, although they will adapt any method that will increase turnover to the point where they can finally make a profit. Moreover, there are many who no longer wish to work with the poisonous methods that agribusiness is foisting on them.

There are organic growers, biological and biodynamic farmers, as well as permaculture farms. The farmers still working with agrochemicals now have the chance to switch to something that does not depend on the ability to kill everything, but simply repels it, in imitation of nature. By joining together and building on our experimental and experience-based knowledge, we can sow the seeds of change for today and tomorrow.

Small is Beautiful

Let us return to the concept of the minimum dose and see if we can satisfy the rigours of orthodoxy, by producing a comprehensive and concise theory that satisfactorily explains the conundrum of the homeopathic potencies. After all, if we claim that homeopathy is scientific, we must be able to explain it scientifically.

Hahnemann considered these things unimportant, essentially because he did not have the language to describe it. To the modern homeopath it can make the difference between looking somewhat bewildered or sheepish and being capable of sufficiently impressing the most learned of scientific brethren.

Since size is considered important, we must first consider the size of the dose. After all, this entire book is written about the same subject and the results of too large a dose. We see how the size of the dose affects the health of those who took it. We have seen that pumping endless amounts of poisons onto the land has the severest repercussions.

The smaller the dose, the easier it is for a substance to evade detection by the body's defence system. A perfect example of the power of small doses is the American leopard frog, which becomes a hermaphrodite from a concentration of only 0.1 part per billion of the herbicide Atrazine. If we then also consider that drugs like Prozac are in the tap water of many large cities in ultra-small doses, we can begin to appreciate their effect on all living entities that use that water.

Heavy metals are becoming a problem in seafood, especially shellfish. Cadmium, mercury, lead and other metals are suspended in the water and fed upon by microscopic creatures. Bacteria process mercury and clover processes mineral oil. That same clover enters the food chain via the animals that eat it, and from there it can be ingested by humans.

This is of course not restricted to humans, but is extended to all living entities: rats in the sewers, amphibians, and fish in the rivers and oceans, which all are part of the food chain. Accumulation over long periods of time will cause proportionately cumulative effects that are not yet fully understood. Recent investigations show that our drinking water is severely polluted with all kinds of agricultural and medicinal chemicals, which have a cumulative effect on our health.

Most of these effects are caused by minimal amounts of these chemicals and not by larger amounts, since the body will react immediately to such pollutants in large doses. This does not mean that we will not get sick, but

that our disease is more difficult to recognise.
If we trace the interest in small doses in history, we notice that Hippocrates was credited as being a cautious prescriber, keen to support the work of "the healing power of nature" and generally reluctant to administer drugs. In the Renaissance, Paracelsus wrote that the difference between poison and medicine depends on the quantity consumed:

> *All things are poison and nothing is without poison; the dose alone makes a thing not poison. For example, every food, every drink, if taken beyond its dose, is poison: the result proves it.*
>
> (Paracelsus, Seven Defensiones)

In other words, substances deemed toxic may be harmless in small doses, and at the same time apparently innocuous material can be harmful if large amounts are taken.
Hahnemann also took great care over the question of dosage. He even decided to not treat patients till he found the proper manner of doing so, since the medicines caused more death than the disease.
He demanded from his disciples strict adherence to the rules governing the dose. He called those that deviated "the mongrel sect" and considered them not worth his while. This leads us to consider all the aspects connected with the concept of the minimum dose. I will now discuss some modern concepts regarding the potency conundrum, which involve the concepts of quantum mechanics.

A. De Minimis Maxima

Many are the objections that those ignorant of homeopathy and its doctrine have brought against the "Organon of the Medical Art". The founder of homeopathy has been accused of all sorts of things, with particular scorn being reserved for our infinitesimal doses which are dismissed as mere placebos.
Orthodoxy has the greatest difficulty with our dilutions, which they consider to be ineffective. If there is any effect from homeopathic medicines – so it is claimed – it can only be the effect of suggestion and thus be nothing more than a placebo effect. If this be true, it would serve even the orthodox to adopt them, since they are apparently very useful, as placebos can be more efficacious than orthodox medicine.
Hahnemann was engaged in mainstream research when he conducted his experiments with the remedies in ultra-fine dilutions. In his attempts at

explaining them, he lacked a ready language in which to express himself. Like Paracelsus 300 years before him, he had to invent the language by which he could explain what was really happening. If we study his "Organon", we find there the solution to the potency conundrum. Let us consider Hahnemann's own words, to see if the solution can be found.
Here Hahnemann makes a few apparently outrageous claims and statements.

> *The homeopathic medical art develops to a formerly unheard of degree the internal, spirit-like medicinal powers of crude substances. It does so by means of a procedure which belongs exclusively to it … whereby these substances become altogether more than ever - indeed, immeasureably - penetratingly effective and helpful…*

These are pretty large claims. And then comes the clincher:

> *Even in those substances which, in their crude state do not manifest the least medicinal power in the human body.*
>
> (Organon § 269)

Indeed, this is the most outrageous of all his claims, at least in the minds of the sceptics and so-called quackbusters. Yet we all know from practical experience that they work and that their power is awesome. So how do we obtain this power?
Hahnemann gives a description of the basis process:

> *This remarkable alteration in the properties of natural bodies is achieved through mechanical action on their smallest particles by trituration and succussion while these particles are separated from one another by means of an intervening, indifferent substance that is either dry or liquid. … This process is called dynamization or potentization … . Its products are called dynamizations or potencies of different degrees.*
>
> (Organon § 269)

Several attempts have been made to explain it, but none has succeeded in doing so to everyone's satisfaction. We must therefore consider carefully what Hahnemann really meant. Let us investigate these claims on their own merits before we throw out the baby with the bathwater.
The claims of Hahnemannian homeopathy are reminiscent of Richard Feynman's statements when he was working for the California Institute of Technology. He put it like this at a meeting of the American Physical Society in 1959:

> *I can hardly doubt that when we have some control over the arrangement of things on a small scale, we will get an enormously greater range of possible properties that substances can have.*

This means that when the size of the building blocks of a material become smaller than the critical length-scale associated with any property of that material, the property changes and can be engineered accordingly through size control.

> *The appropriateness of a medicine … does not rest on its apt homeopathic selection alone, but also on the … correct size … of its dose.*
>
> (Organon § 275)

By means of division and dynamisation, preparations are produced that only in this way attain their full capacity to influence the suffering parts of the organism.

B. Nanophase Potencies

In homeopathy, the theoretical basis is covered by the "Organon", as far as most homeopaths are concerned. Others have taken the theorising further, as can be seen from all the books that have been written on the subject. George Vithoulkas has written books that seek in an admirable manner to make the homeopathic way of thinking accessible to the public. Similarly, Harris Coulter has published several titles that attempt to explain some of the theoretical difficulties we encounter in homeopathy. Several other homeopaths, too many to mention here, have contributed to the understanding of the theoretical foundations of homeopathy.

While the allopathic orthodox brethren invariably declare all such attempts superfluous or flawed, they have served at least as reference points for the student of homeopathy. In all these attempts, the focus has been more on the theoretical basis of how homeopathy works than on anything else.

Besides the argumentational shortcomings of orthodoxy, there have not been any homeopaths who have explained the potencies from a truly scientific viewpoint, since their apparent inability to do so is – in my view – caused by the divergence between the mental and emotional symptoms in homeopathy and the explanations by mechanistic theories. Moreover, the divergence between dilution rate and power of a remedy, so brilliantly displayed in their action on the sick, has also not been adequately explained. It is these "placebos" that form the subject of this short chapter. Their apparent

effectiveness needs at least further explanation.
Over the years, many eminent minds have broken their heads over our potency conundrum. How does the remedy become suspended in the carrier and how is it possible that it gives us medicinal power, when the crude form does not even show any? Several people have tried to find an explanation for the apparent contradiction that with the reduction in quantity there is a simultaneous increase in power in our homeopathic potencies.
To date, no one among our esteemed colleagues has been capable of addressing this adequately, at least not to my personal satisfaction. Several attempts have been made, but none are completely satisfactory. They all proceed from the carrier – water, ethanol or lactose – in an attempt to explain how and why the carrier apparently takes on the properties of the remedy.
Many experiments have been conducted, in the more remote past as well as recently, to at least prove the existence of something in our potencies; below I will give some examples.
In 1948, Wormser and Loch tested several substances from 24X to 30X. They used a photoelectric cell to measure the intensity and wavelength of these potencies and found measurable changes, of both intensity and wavelength in these substances.
In the years 1951-1953, Gay and Boiron tested both distilled water and *Natrium muriaticum* in the 27C potency for their dielectric constant. They were able to show that the potency of *Nat-m*. could be easily selected from among 99 control bottles.
In 1963, Boericke and Smith tested a 12X potency of *Sulphur*, with and without succussion. They tested the solvent structure by nuclear magnetic resonance spectrum. They found that there were structural changes in the solvent, as the potency was increased by succussion, while no such change was detected in the controls. They repeated the experiment in 1974, with various potencies of *Sulphur*, up to the 30C.
In 1966, Stephenson and Brucato tested both distilled water and *Mercurius corrosivus*, from the 1X to the 33X. They found that the dielectric constant for the controls varied from 5.6 to 6.05. For the homeopathic potencies it varied from 2.8 to 4.4.
In 1975, Young tested *Sulphur* from 5X to 30X, with controls. He also tested the solvent structure by nuclear magnetic resonance spectrum. He found that there were measurable changes in the spectra at each dilution and succussion.

No such changes were observed for the solution without succussion or without *Sulphur*.
In 1976, Boiron and Vinh used Raman Laser Spectroscopy, showing that for the 1C potency of *Kalium bichromicum* the spectrum of alcohol disappears completely, while that for potassium bichromate appears. In *Kali-bi*. 1C the ratio of the number of potassium bichromate molecules to alcohol molecules is 1 to 500. In such a case the light meets 500 more alcohol molecules than those of bichromate, yet the alcohol spectrum does not appear.
In 1982, Resch, Gutman and Schauer found that dilute sodium chloride solutions revealed an increase in electrical conductivity by rocking them prior to measurement.
Four French researchers developed a method of detection through nuclear magnetic resonance, conducted in the late 80s, which shows specific sine waves for each potency, as well as a specific sinus wave for the substance used. These latter remain the same throughout all potencies of that substance, while the sinus wave expressing the potencies are specific to those potencies. Thus a clear and recognisable scientifically provable frame of reference exists for each remedy and potency.
These are, however, the only physical proofs we possess that potencies have something more than distilled water and alcohol. From these examples it is obvious that there exists a particular quality in homeopathic medicines not found in mere dilutions beyond Avogadro's limit and even before that. We mention this because we expect some resistance from the mechanistic heads at work in diverse research facilities, which will no doubt put forward many objections against the use of homeopathy in high dilutions.

C. From Avogadro to Quantum Mechanics

The silliest of these is Avogadro's limit, which tells you nothing more than that in any given substance, there are no more molecules found beyond the 12th centesimal or the 24th decimal dilution. However, there are between 2 and 250 atoms in each molecule, so their relative size should have an influence on the dilution rate – at least in the potencies. Moreover, Avogadro discovered the limit for gases, where the molecules always have the same size, regardless of the number of atoms per molecule, while its use for dilutions is but a derived value. Even the use of the term is misleading for that reason alone and is thus not scientifically sound.
Avogadro's limit tells you nothing more than that he had no means of

detecting beyond the molecular level. Yet we find that nuclear magnetic resonance sine waves are not found in Avogadro's dilutions, but are visible from the second homeopathic potency onwards. This is because the homeopathic potencies are not mere dilutions, but receive the succussions that are believed to confer their power.

However, the mystery remains. These are not explanations, but the gathering of relatively useful data. Such data, moreover, is not the process.

A homeopathic potency lasts indefinitely and can always be perpetuated simply by adding new solvent. Nor can psychic induction be quantified or shown to be subject to entropy. Einstein's formula $E = mc_2$ does not apply, there being no quantities, masses, energies or velocities.

In reality, our remedies are quantum mechanical entities, which derive their effectiveness not from the imagination of the patient or some such magical superstition. We shall try to satisfactorily explain our potencies from the modern scientific point of view.

We also do not believe we must succumb to the onslaught of these orthodox superstitions or their demands for pseudoscientific rigidity; rather, we should finally be able to explain our entire doctrine, especially our potencies, scientifically.

If we examine the achievements of technology in the domain of the ultra-small, we notice that nobody raises objections to the microchip, nanobots, atomic particles such as neutrons, quantum-mechanical photons and other examples of ultra-small scale; but similar recognition is denied to homeopathic remedies.

This is due to bias and/or prejudice, of which our opponents have plentiful supplies; in the face of the reality of homeopathic potencies it is anything but scientific. In reality, it is utterly childish. We might expect at least adult behaviour in those scientists who are opposed to homeopathy through ignorance.

> *By means of this mechanical processing … a given medicinal substance which, in its crude state, is only matter … is subtilized and transformed by these higher and higher dynamizations to become a spirit-like medicinal power. This medicinal power in itself no longer falls within our senses. The medicated globule becomes the carrier of this invisible power and, in this capacity, it documents the salutariness of that power*

in the sick body.

(Hahnemann, Organon § 270)

Nanophase technology is a relatively new way of using materials – at least in the field of technology. It seeks to change the properties of a substance through an extreme reduction in the size of the particles, according to the principles set out by the physicist Richard Feynman, quoted above. When the particle size is reduced to nanometre size, it is smaller than the critical mass associated with its regular properties. As a result, those properties change to something different and the difference is determined through control of the size of the particles.

In regular nanophase technology the properties sought after are malleability, elasticity, hardness, superconductivity or being ceramic-like, among several other options. In order to arrive at the nanophase, the substance is boiled and transformed to the gaseous state. The gaseous particles are then passed through an inert gas like helium or a chemically active gas such as oxygen, depending on the properties that are wanted after precipitation.

In the case of the inert gas, the properties of the substance itself are changed. In this manner, malleability, elasticity or the hardness of the substance are changed, depending on the size of the particles. In the case of a reactive gas, the structure of the substance is changed. Thus, a metal becomes a ceramic or superconductive, also dependent on the particle size. Since control of the particle size is a relatively easy matter, substances can be made with great accuracy.

Besides the boiling method, nanophase technology makes use of superfinely ground powders to produce its diverse products. In the case of superfine powders, the resultant product is again dependent on the particle size. It is the latter method that applies to homeopathic potencies, since they also depend on grinding the substance to the appropriate sizes, so that the medicinal powers are released or developed.

Another method makes use of neutrons to bombard a substance and so reduce it to the nanophase. The bombarding neutrons peel off neutrons from the substance and so reduce its size and hence change its properties. Depending on how many neutrons are peeled off, different properties arise. The control consists of regulating the number of neutrons bombarding it or the amount of time.

D. More Ways to Skin a Cat

The manner by which to arrive at the nanophase must have some bearing on the type of properties generated, otherwise the nanotechnologists would stick with one method only. Different examples can be given in which this is the case. There is more than one way to skin a cat. We shall list them here for the benefit of the student.

- The Gastein gneiss formation and its nanophase suspension in the drinking water, producing cretinism.
- The fluxion potencies that generate the equivalent of a 10M from a 3C in one hour.
- The suspension of nanophase particles of lead and copper in drinking water, where such conduits are used.
- Volcanic action, where under heat and pressure one type of stone or other material turns into another.
- Cooking, where the ingredients all change properties.
- Bombarding a substance with neutrons, so that it falls apart in nanophase particles of a particular size, generating particular properties.
- Boiling a substance and driving it through an inert gas to crystallise the nanoparticles, precipitating them onto the wanted precipitate.
- Superfine grinding of substances to the nanophase, to obtain different properties.

Since there are several ways in which the nanophase can be obtained, we propose that trituration is accepted as a valid manner in which to obtain nanophase particles that generate different properties.

How is it possible that solid materials become soluble in water or alcohol? Solids never do. The answer is that under pressure – with the mortar and pestle – the grains are reduced to nanometre size and they slide over each other more easily than millimetre sized ones. In the case of solids, the grains are bound to each other. A fracture occurs when too many of these bonds break. If a crack opens, atoms from the lactose begin to move to fill them in. The smaller the grain size, the shorter the distance the lactose atoms have to travel and thus the more finely the substance can be ground. Simultaneously, the substance particles penetrate the lactose particles in the same manner, thus passing on their properties to the lactose.

Our lactose component differs from the nanophase, in which boiling is used to create the equally sized particles and a gas is used to crystallise the

particles, which is wanted in a nanophase material. We, on the other hand, want to crush those bonds as well as create particles of different sizes and so change the properties of the material. The lactose achieves the opposite of the inert gas used in nanophase materials.

Just as nanophase technology discovers new properties in matter, homeopathy has done so for the last 200 years. Nanotechnology products and homeopathic potencies are different from ordinary substances - they have quantum mechanical properties. While nanotechnology uses the boiling point of materials or alternatively superfine powders to precipitate nano-sized particles, we use the mortar and pestle to achieve the same – reduction to nano-size particles. The processes do not differ greatly – grinding equals heat and pressure. In the making of a potency, we seek to divide the nanophased particles, as opposed to the nanotechnologists, who seek to collect them.

A homeopathic remedy is really a nanophase half-product, which needs the human body to precipitate its entire product, which can be either of two states – health or disease. Therefore it is invisible as long as precipitation does not take place. Trituration is the separation of the nanospheres from the original substance, passing through lactose as the carrier, before precipitation in the body with either health or disease as the final product. In summary:

- At the nanophase different properties arise *in potentio*.
- They pass through a medium before precipitating into the final product.
- Until precipitation, the properties are in suspension or *in potentio*.
- A potency consists of a product reduced to nano-phase, suspended in a medium before precipitation.
- Precipitation produces the final product – in homeopathy this is either health or disease.

These 5 stages apply to all nanophase products, whether visible as a product with a single property or as one with multi-properties. It merely depends on how many differently sized nanospheres have been suspended in the original carrier. Succussion imprints the entire nanophase upon the carrier, including all its latent properties. At the release of those properties onto the precipitating medium, the entire product becomes visible.

To understand the concept of nanophase potencies, the following points regarding nanophase materials and products must be considered:

When control is obtained of the arrangement of things on a very small scale, we arrive at a vastly greater range of possible properties that substances can

have. (See also Organon §269)
When the size of the building blocks of matter becomes smaller than the critical length scale associated with any property, that property changes and can be engineered through size control. (See also Organon §270)
There exists a variety of methods of synthesis to produce nanophase materials:

1. Synthesis from atomic precursors.
2. Synthesis from molecular precursors – homeopathic potencies.
3. Chemical means.
4. Physical means – homeopathic triturations.
5. Mechanical grain refinement – homeopathic triturations.
6. Bombarding a substance with neutrons, so that it falls apart in nanophase particles of a particular size, generating particular properties.
7. Preferably nanophase materials are made from chemical and physical means, because in them size control is the easiest. However, other methods yield valuable results, sometimes with greater ease. Trituration is such a process and so is succussion.
8. Nanophase materials are made by bringing a substance to the boil and collecting the evaporated atoms, then exposing them to an inert gas such as helium to cool them down. They then condense as small spheroid clusters. The exact diameter is controlled by the evaporation rate and the type and pressure of the inert gas. Accumulation and precipitation produces a macromaterial.
9. Ultrafine powders can be made into consolidated materials. Trituration is a way of arriving at the superfine powder stage.
10. Nanophase titania is made from 10-nanometre clusters of titanium, which have reacted with oxygen.
11. A nanophase metal is formed without any reaction with other elements, using an inert gas for precipitation.
12. A nanophase ceramic is formed only from a reaction with an appropriate gas, such as oxygen, which is reactive.
13. Each other material is determined by the size of the clusters and the gas, reactive or not.
14. This process can produce metals, ceramics, semiconductors, superconductors, polymers with optical, chemical and/or electrical

properties. Transparency, UV protection, colouring, cosmetics, catalysts and magnetic properties can all be achieved with nanophase technology.

15. Cooking, where the ingredients all change properties.

Nanostructures are found in nature:

16. In seashells and skeletons.
17. Fire produces nanophase smoke particles.
18. The remedies *Gastein aqua* and *Lapis albus* are themselves nanophase products. *Lapis albus* (literally “white stone”, a form of calcium silicofluoride, $CaSiF_6$) is a trituration of the mineral gneiss, found by Grauvogl in the mineral springs of Gastein and named by him. The waters flow over the gneiss formations into the valley of Aachen where goitre and cretinism abound.
19. Fluxion potencies are also nanophase products.
20. Copper and lead poisoning from drinking water, which is passed through pipes made of these materials.
21. Herbicide, pesticide and fungicide poisoning in the rivers, lakes and oceans, where the substance is present in the lowest possible dilution. As an example, 0.1 per billion of Atrazine causes hermaphroditism in amphibians.
22. Nitrogen pollution in the ocean, as seen at the Great Barrier Reef.
23. Pollution with other agrochemicals causing changes in the lifecycle of diverse groups of animals.
24. Volcanic action, where under heat and pressure one type of stone or other material turns into another.

E. Water, Complicated Simple Substance

Nanophase materials and colloidal suspensions are related to my quantum-mechanical concepts of potency. Nanosphere cobalt has different properties: pliable or ceramic, superconductive or elastic, for instance. This may mean that if such a material is potentised, we could get different properties altogether. In the crude state we do not have those properties.

In our remedies we also have different properties in the crude form compared to the potentised forms. This is even more so with the medically inert substances. The action of such inert substances is only released by the process of trituration. It may also mean that for *Cobaltum* 30C, for instance,

could have all the properties possessed by cobalt in all its phases. This is because the admixture with lactose in the first three stadia of potency may release the full properties to the lactose, which then dissolves in water.
On the one hand, those nanophase particles between 20 and 100 nm show differences in material properties which are useful for nanophase materials. These particular sizes are necessary for the properties required.
On the other hand, homeopathic potencies cannot change properties at the same nanophase as the nanophase materials. This is impossible, since the properties are totally different.
We must therefore conclude that homeopathic potencies are obtained at another nanosized particle, possibly larger, but more likely smaller than the nanophase materials. One would naturally expect that the subtler a property, the smaller the nanophase must be, to accommodate the subtlety. Since nanophase particles are visible under the electron microscope, it should be easy to confirm or refute these notions.
Consciousness or mental and emotional properties are among the more subtle. So are programmability and holographic properties, all present in the raw substance, and released when triturated with lactose. Moreover, the subtler the properties, the more easily they should dissolve in water.
Water is that wonderfully complicated simple substance at the border between alkaline and acid. It is the universal reagent, while not itself being affected. Simple distillation returns the original substance, whether it is a simple solution or a nanophase potency before distillation.
Water does not have a memory, as Benveniste asserted. Water is a storage medium, much like a CD or a hard disk in a computer. The disk has no memory, but only space to write bits of information. Similarly, water has space to store bits of matter or the information concerning that matter.
Matter can be divided by several means to nanometre-size and smaller. Our potencies have been reduced to nano-size powders, which are soluble in water. The process of succussion, which is rhythmically shaking the vial with powerful strokes, arranges the water molecules in patterns.
At sea we call these patterns waves. That pattern arranges the water molecules on a micro scale, whereas the waves in the sea are macro-patterns. It is a question of size, as we see in the nanophase materials. The pattern arranges the water molecules, in which the intra-molecular spaces provide a foothold for the nanophase substance to be carried. Succussion is the writing

programme that puts the information on the carrier – the water. That water, like a CD, can be carried everywhere and equips the sick body with the right programme – the corresponding remedy.

F. Programmable Solutions

Put into proper sequence, the body is similar to an infected PC which needs an antivirus programme. The remedy is like the programme that the body needs. The remedy has received the programme by succussion, which is the writing programme that put the information onto the CD/water. Water sweetened with sugar stays sweet till you distill it.

Distillation again is the program which cleans up the CD – the bottle of water. We need only a small portion of the programme to write it fully onto the next CD, implying holographic properties in the programme.

To express it differently, homeopathic potencies are holographic medicines, where the part contains all the properties of the whole. This is contrary to ordinary reason, where the reduction in size always implicates a reduction in properties. Of course a hologram has the peculiar property that the smallest particle always contains the whole. This is why such a small dose has such dramatic effects.

Medicine is the hologram of disease. Its smallest part always contains the entire picture of the disease.

“As above so below” is not merely an unsubstantiated or unsubstantiable statement of mediaeval superstition. The concept of the entire Milky Way represented in the human body extends also to the other side.

To the remedy in the smallest possible dose, man is a macrocosmos. Their microcosmic scale is as much a reflection of the universe as man is. In the cosmic scale, man holds the middle ground between the micro- and macrocosmic size. For this reason, humans walk and stand upright.

All his states are reflected in the heavens on a macrocosmic scale and in the remedies on a microcosmic scale. The remedies and man are holographic images of the real thing on the macrocosmic scale. That reality is in turn a holographic image of a larger entity still, whose reality is reflected in each holographic universe.

Humans, as well as animals and plants, are holographic images of this and their reality is reflected in all the different remedies. A hologram of reality is what constitutes our universe, our body and our remedies. For each state a corresponding hologram can be found. All states exist in the original and

therefore must exist on every level and in each universe from macro- to microcosmic scale. Homeopathy is in a sense a game of matching holograms. As the remedies are capable of generating disease, so they can cure that same disease.

Our scales of potencies made from medicinally inert substances prove that Feynman's assertions for nanophase materials are also applicable to our remedies. For these potencies suddenly develop medicinal powers when they are reduced below the critical length scale associated with their crude properties. This means that the process of trituration causes a change in properties, with the implication that the critical mass associated with its regular properties – non-medicinality etc. – has been reduced to nanophase size and has generated different properties, such as medicinality.

The process of arriving at the nanophase does not matter very much, as we have already seen – only the reduction to nanophase size has significance for the new properties that arise.

Our properties are medicinal, as opposed to malleable, superconductive or strong. Although trituration seems very different from the making of uniform extra-fine powders, the process of grinding is the same. We seek not to have uniformity nor to accumulate the nanophase particles, but rather to disperse them. Also, we want not just one property, but all possible properties, from different nano-sized particles. This is what makes nanophase materials and homeopathic potencies different in both effects and properties.

Let us now investigate another microsized phenomenon that is subject to much speculative thought by scientists and which falls in the same category as our nanophase potencies.

Genes and Feedback Loops

The embryologist Van der Wal observed that DNA "was driven by the environment" and not the other way round:

> *Developmental biology – including embryology – is dubbed the instructor for insight into the phenomenon of development. A consideration of the process of differentiation in the embryo alone makes it impossible to go on regarding DNA, cells etc., as the primary attributes of a living organism. The biological nature of cells, tissue, "parts" is (in part) determined by the nature of the environment (e.g. metabolic conditions, spatial position in the whole) and can change over time.*

The genome (this is the entirety of genetic coding laid down in the nucleus of cells) does not change, but during differentiation, in the context of the peripheral environment of the cell, is subject to external influences. It is established that differentiation is an "outside-in" process, not the other way around. The DNA plays the role of "constraint", this is the retention of potencies in the second instance; the periphery manipulates these potencies. The DNA "is not expressed", its options are determined from "outside in". The definition of a gene as "a piece of DNA" is not meaningful. What is a "gene" without the context of the organism within which it is manifest? The DNA molecule is no more nor less than the centre in an ecological context which can be called the "genotype" or "cell" or "organism".

(Van der Wal and Lammerts van Bueren)

It has become increasingly clear in neuro-physiological research (Meijer, 2002) into the biological clock of the rat that there is a considerable difference between the clock in the intact animal and the isolated structure. Meijer sees it as a clear example of emergence:

You see patterns appearing in the gene network which work in a somewhat more complex manner at the protein level. At the level of neuronal networks new properties come into being which were not present at the genetic level. Finally brain structures and the rest of the body also start up an interaction which again delivers a new outcome.

(Meijer, Neuro-Physiological Research)

The presence of emergent properties in self-organising systems is also described by Camazine et al. (2001) in their book "Self-Organization in Biological Systems":

Emergence refers to a process by which a system of interacting subunits acquires qualitatively new properties that cannot be understood as the simple addition of their individual contributions. Since these system-level properties arise unexpectedly from non-linear interactions among a system's components, the term emergent property may suggest to some a mysterious property that materializes magically.

(Camazine, Self-Organization in Biological Systems)

The following example described by Camazine et al. demonstrates the principle of emergence:

The eggs of Dendroctonus beetles are laid in batches beneath the bark

of spruce trees. Larvae hatch from the eggs and feed as a group, side by side, on the phloem tissues just inside the tree bark. Previous studies have shown that the larvae emit an attractive pheromone. In a series of experiments the larvae were randomly placed on a circular sheet of filter paper 24 cm in diameter between two glass plates separated by 3 mm to allow the larvae free movement. The subsequent positions of the larvae were observed over time. The degree of clustering exhibited by the larvae was found to depend strongly on the initial larval density. At low density (0.04 larvae/cm$_2$), a loose cluster appeared, but it did so only slowly, in approximately 1 hour, and comprised only 25 per cent of the population. In contrast, at high density (0.17 larvae/ cm$_2$) a single tight cluster rapidly assembled. Within 5 minutes about 50 per cent of the larvae were clustered in the arena's centre and after 20 minutes some 90 per cent of the larvae joined this cluster. The experiments demonstrated a simple emergent property – a cluster – in a group where the individuals initially were homogenously distributed. At a certain density of larvae, the system spontaneously organizes itself.

(Camazine, Self-Organization in Biological Systems)

The Powerful Placebo

Van Wijk and Wiegant (1997) examined the validity of the similia principle. With their research they showed that "if low doses of harmful conditions are administered according to the similia principle the capacity for survival (expressed in terms of development of tolerance) is stimulated at cellular level and protector proteins are also stimulated." The research gives an important indication of a regulatory mechanism on which the similia principle is founded. Eskinazi (1999) expounded on the scientific state of affairs with regard to the theoretical objections to homeopathy. With modern insights there is little left of the theoretical objections. First the objection to the theory that pathogenic substances can also cure. The author gives an extensive list of examples in which this principle also applies in conventional medicine. This principle has also now been recognised in cellular biology and is known as hormesis. The most surprising thing is that it was a conventional scientist who removed the objection to high dilutions.

Recent articles by two research groups have raised doubts about the scale and even about the existence of the placebo effect. Kienle (1995) carried out a

critical analysis of Beecher's fundamental research, which produced the initial concept of the "Powerful Placebo". She describes a multitude of weaknesses in these studies and demonstrates that all Beecher's so-called proofs of the placebo effect could have other explanations. From an entirely different point of view, Danish researchers Hrobjartsson and Gotzsche (2001) reviewed 130 clinical trials in which a placebo was compared with an experimental treatment.

They concluded on this basis that it was unlikely that the so-called placebo effect could lead to significant changes in the parameters of physical diseases, but that it can lead to significant changes in psychological disturbances, such as anxiety. Given the notion that a placebo is in essence a psychological phenomenon (for example, the thought and feeling that you are receiving something which will probably help), the researchers' conclusion that placebos only have a significant psychological and not a physical effect, is understandable.

In view of the arguments raised above, it is clear that the theory of ontological reductionism fails on internal and external conceptual grounds, as well as empirical grounds. It is also demonstrated that there is evidence of a working mechanism underlying the similia law. Finally it is clear that the alternative explanation – i.e. the placebo effect – for a subsequent effect in studies on the effect of a homeopathic treatment is unlikely.

This disposes of the theoretical obstacle to the acceptance of homeopathy, namely that a homeopathic treatment cannot be effective because the working mechanism is not compatible with recognised scientific, in this case, biological, chemical and pharmacological, theories and insights.

Furthermore there is the discovery that many scientific facts argue in favour of the theory of ontological holism. This raises the question of why it is not more widely embraced as a theory in science. In our view this is due to the deep-seated belief that effects in nature can only be attributed to material phenomena. Many people are unaware that this belief was not held throughout the majority of human history.

From Plato (427-347 BC) and Aristotle (384-322 BC) to the Middle Ages, however, the notion has existed in scientific history that there is a world of ideas, which, as causal principles, give shape to things in nature. These ideas or universals were seen as complex, differentiated systems of forces which gave an organism such as a plant or a human being its shape and enabled it to

keep it. Both Plato and Aristotle maintained that such causal principles existed, and that they could be known and understood, according to Plato, by looking in thought into a spiritual world of ideas and according to Aristotle by turning one's sights on the world of individual things.

In the mediaeval debate on universals, this world of ideas was not denied, but Realists and Nominalists argued about whether man could know these causal principles. The debate was eventually won by the Nominalists and the question was answered in the negative.

The next historical milestone was the work of Francis Bacon in the 17th century. Bacon argued in his "Novum Organon" that the task of the scientist should not be the broad sweep of ideas, but careful observation and experimentation. A final phase in this historical development came in the second half of the 19th century and the start of the 20th century. In this period, following on from the previous historical views that man could not know the causal principles of forms (universals debate) and that it was not the task of the scientist to know these principles (Bacon), the existence of this body of causal principles was denied. An article in *Virchow's Annals* (1907) summarised the biological and medical view of the time as follows:

> *Modern medicine has defined its view as mechanical, its aim as establishing a physics of organisms. This has shown that life is merely an expression of a sum of phenomena each of which proceeds separately according to the normal physical and chemical (that is to say mechanical) laws. It denies the existence of an independent life force and natural curative power.*
>
> (Arch. Path. Anat. 188: 7, 1907)

This terse conclusion illustrates the historical steps which led to the gradual denial of the existence of causal principles and the reduction of the cause of natural phenomena to the functioning of material particles. Causal-mechanistic or ontological-reductionist thinking is an expression of this development. We have demonstrated above that this theory is not tenable on a number of grounds. To arrive at a reasonable alternative we have to look more closely at the question of causality.

If an experienced tennis player hits a perfect shot at Wimbledon there is, at the physiological level, a sequence of biochemical reactions in time. In this case there must be a transfer of information, which causes all the biochemical steps in time to be attuned to each other so that ultimately the entire process

of preparation and execution lead to the ball hitting exactly the right place at exactly the right time. We could call this a “time Gestalt”.
In a general sense all this applies afresh to a subsequent but different perfect shot in another place. However, since this is another type of shot there is a different “time Gestalt”. In this “Gestalt” we can distinguish two causal layers: a vertical and a horizontal layer. In the horizontal layer there seems at first sight to be a cause-effect chain because, for example, increasing the hormone level leads to an increase in the glucose level in the blood. Each preceding “cause” in time leads to a subsequent “effect” in time.
However, on further consideration there is a problem here, which was previously identified by Bertrand Russell. This is that an effect which precedes something in time no longer exists when the effect occurs. The cause has already disappeared. How can a cause which no longer exists bring about an effect?
To solve this problem the scientific literature turns to the concept of “information”. The information is supposedly transferred from one stage to the following stage. This brings us to the second, vertical, layer of causality. In the case of the perfect shot, but also in other self-regulatory skills, and the self-organising physiological processes which can only be understood in terms of the species, there is a hierarchically higher-ranked principle that provides the coherence between, say, biochemical stages in time, but which also provides the context for the object of all the processes as a whole, namely performing this specific tennis shot at this moment or creating this specific tissue structure. The principle also provides an explanation for the transfer of information between the various stages in time in the horizontal causality layer. This higher-ranked principle is not immediately perceptible to the senses, but is manifest in bringing coherence in time and space.
Homeopathy and also anthroposophic medicine assume this sort of higher-ranked and forming principle in nature. The pharmaceutical processes used in these forms of complementary medicine are aimed at releasing these forming or in-form-ing principles from matter, which is set in time and space. In this way these matterless forming forces can be used as medication. From this point of view it is also conceivable that there are medications in which no material molecules remain.
Let us now determine the rules governing the repetition of a dose of these powerful placebos that are obviously and evidently no placebos.

Rules of Repetition

Boenninghausen quotes Hahnemann's "Chronic Diseases" in his "Lesser Writings", in the following passage:

> *If the medicines do not act out their full time, while they are still acting, the whole cure will amount to nothing.*
>
> (Boenninghausen, Lesser Writings)

Boenninghausen writes, again quoting Hahnemann:

> *The fundamental rule in this respect remains: … to allow the dose of the medicine selected to complete its action undisturbed so long as it visibly furthers the cure, a process which forbids every new prescription, as also the repetition of the same remedy.*
>
> (Boenninghausen, Lesser Writings)

I do not think that further quotes are necessary to impress upon the reader the necessity of the single and smallest possible dose to be administered to people, as even to ourselves this is plainly obvious from the writings of the old masters. Having established the rules that govern the use of homeopathy, I will conclude this exposition with a few remarks about the work so far conducted.

Although in true homeopathy we do not use polypharmacy, which uses complexes, interesting experiments can be instigated in which some of these remedies can be mixed in their crude form, from which combination a single tincture can be prepared.

This is similar to the process of production of a remedy which is mixed in its crude form, after which the potencies are made, for example *Hepar sulphur*, *Causticum* and others. These are not complexes but simplexes. Those who call themselves homeopaths but use complexes are not following the central principles of the homeopathic system, as illustrated in the quotations from Hahnemann's writings presented above.

It is true that Hahnemann himself sometimes used one remedy in the morning and another in the evening and sometimes two simultaneously, to cover the totality of symptoms. However, given the clarity of his philosophy, coupled with his emphasis on the need to offer practical aid to suffering patients, this can be explained as a pragmatic compromise due to the paucity of homeopathic remedies at his disposal necessitated by a paucity of homeopathic remedies in his time. He proved 99 remedies himself – evident from his "Materia Medica Pura" and the "Chronic Diseases" – and his

disciples proved perhaps another 20 or 30 in his lifetime.
The “Organon” was written for the future, when many more remedies would be proved. Indeed, homeopathy now has descriptions of some 2,500-3,000 remedies and the need for mixing or simultaneous use has thereby been superseded. Hahnemann himself was highly critical of the “mongrel sect” of prescribers who employed homeopathic remedies without applying homeopathic principles for their selection (Organon §148, footnote). Like his later followers, I would urge readers to follow the true spirit of this complete system of medicine. Our aim should be to seek the single most similar remedy to match the specific problem and circumstances as closely as possible (the simillimum), rather than be tempted by the apparently “easy option” of multiple prescriptions of mixtures of remedies. This is a short-cut quick-fix destined to end in failure.
Thus far we have looked at the theoretical basis for the ideas concerning homeopathy and its effects on man, animals and plants. Now it is time to consider the diverse methods of growing food plants under the general heading of agriculture.

1 in the 6th edition of his “Organon of the Medical Art”, translated by Decker and O’Reilly (1996)

4. Agriculture

Long before anybody used modern agricultural methods, farmers used to grow crops in a different way from today, using the simple methods of traditional farming.

They used manure for the soil and herbal sprays when pests or diseases attacked the plants. They used companion plants, such as chamomile, among the vegetables. Beans and corn or basil and tomatoes have been grown together since Greek and Roman times.

One very old practice is tree-flogging, which dislodges hibernating insects, removes excess fruit spurs, releases sap, splits bark and stimulates growth. This is still practised in many cultures. Baker and Cook (1974) asserts that it relates “to the innate relationship of humans to plants, rather than cross-cultural exchange.” With the industrial revolution and the introduction of harvesting machinery, monoculture made its appearance. From this time, farmers have used sprays in large amounts and insects have gradually become resistant.

The first pest and disease control measures aimed at a knock-out non-selective elimination. Products such as wood ash, soot, chalk, dust, tar or ammonia and fumigation processes were often ecologically unsound, since predators and beneficial insects were killed as well. The use of acids, salts and soap was common. Herbals like tobacco, derris, rue, artemisia and others, as well as copper, arsenic, lead, mercury and sulphur were lethal to insect populations. The latter group was detrimental to not only the insects, but also the environment and the people who consumed the crops.

Coal tar, extensively used in the early twentieth century, is a powerful insecticide. It was also used as a wood preservative and herbicide. Mineral oils were used as winter washes, smothering and dispersing agents. They are used to this day.

Insect resistance to insecticides was recorded as early as 1945.

The “Clean Foods Act” was introduced around this time in the USA, to set standards for acceptable chemical residues in food, as a result of controversially high levels of arsenic in fruit and lead in other crops.

In the 1930s Swiss researchers discovered the insecticidal properties of the organochlorines, originally synthesized in 1874. This resulted in the production of DDT, which was used extensively during the final years of

World War II and was only recently banned in most industrial nations.
In the 1950s the organochlorines Dieldrin and Aldrin, and the organophosphates Malathion and Diazion were developed. Carbamates like Ferbam, Zineb and Captan, the herbicides Diurin, Simazin, and Paraquat found their way to the market. Within a short period of time the effectiveness of these products diminished and at the same time they proved highly toxic to the environment.
The search was then directed at biological agents. Species to control pests were bred, such as predatory mites and wasps for use against aphids, and bacterial agents such as *Bacillus thuringiensis* were developed. In Australia the CSIRO, in concert with the State Agricultural Departments, introduced fungal diseases such as rust fungi on weeds. Moths, beetles and parasitic wasps were used against insect pests. That this is not necessarily a happy practice is evident from the increase in fungal diseases in food crops. The best alternative would have been the use of pheromones of plants and insects, as they have no side effects and no build-up of resistance.
All these programmes and methods lose sight of the real problem – the fact that it is the plants which are still being attacked by pests and diseases. Trying to eradicate pests and diseases amounts to a wild goose chase, as neither the pest nor the disease is the problem. The plant has the problem, therefore it is the plant that needs the treatment.
A plant is to some extent similar to a human body. Our mucous membranes are situated in the interior of the body, while in a plant they are on the exterior, protected only by a thin epidermis. Thus the lungs and digestive system are equivalent to one of the biggest leaves of the plant, the capillary system resembles human blood circulation and the urinary system is represented by evaporation through the leaves. Sugars and protein represent the fat reserves and the muscular tissue. When a plant is diseased or suffers from a pest attack, its sugar and protein levels are depleted in a similar manner to the fat and muscular tissues of the human body.
Natural agricultural practices prevent pests and diseases 90-95% of the time. In chemical agriculture such prevention is difficult. This book is written for homeopaths and farmers who are using chemicals and want an alternative. What is presented here comes from my personal experience, the experience of my friends, from confirmed knowledge about companion plants, from published information on agriculture and lastly from the homeopathic materia

medica as it relates to plants.

The Commercial Method

The international headquarters and industrial production centres of the multi-national “big ag” conglomerates gleam with high-tech architecture and machinery. Their publicity material features “perfect” produce and proud slogans.

One wonders how many of the employees have ever worked on a farm or set foot on a small plot in Asia, Africa or Latin America.

Agriculture is big business and big corporations invest millions in research and development linked to product promotion. Pesticide production and genetic engineering may go hand in hand. Cotton was genetically engineered to be resistant to the herbicide Bromoxynil. This was necessary because it damaged the cotton crop as well as weeds. This makes commercial sense, as it helps sales of Bromoxynil.

Ciba-Geigy began an ambitious project to immunise plants in 1993. The idea is straightforward: plants, like animals and humans, have an immune system which can be stimulated to give plants resistance to diseases and pests. The world’s farmers spend some $25 billion annually on chemical pesticides. However, they are not as effective as the farmers would like them to be. Pests and diseases still take about 30% of the annual crops worldwide, 12% of this through diseases and 18% from pests.

Unfortunately, immunising crops is not altogether problem-free. Sometimes it can inhibit plant growth, presumably because defence mechanisms divert food resources from the plant’s growth mechanisms. In addition, when employed too vigorously, defence mechanisms may damage the plant itself. Some of the substances made in response to diseases are toxic both to the plant and the disease. Biologists have to overcome these “side-effects” if they are to sell the idea to the farmers. Another problem encountered with transgenic implanted pest and disease resistance is that a few generations later the pests and diseases have built up resistance and the farmer and his crop are back to square one.

Organic farmers, who are known for their anti-pesticide stance, do not welcome the new techniques all that enthusiastically. It is really answering the wrong question. Farmers are wary about the possible effects of immunisation techniques and in particular of genetically engineered crops. It is producing seeds for a global monoculture.

Immunising plants with homeopathy is indeed straightforward. It makes use of the smallest possible doses and by this means the plants are dynamically immunised against pest or disease attack. Since disease is a dynamic process rather than a linear cause-and-effect process, the problems facing the latter approach (which is used in conventional agriculture) do not apply to homeopathy, which is also a dynamically acting method of pest and disease control.

Just as in scarlet fever *Belladonna* stops the fever and the fever stops the action of *Belladonna*, neutralising each other, so in homeopathic plant immunisation the similar remedy stops the similar pest or disease by neutralising it. In mathematics we see the same – minus times minus results in plus.

The Natural Method

Around the turn of the twentieth century, a series of books appeared focusing on the holistic aspects of agriculture. Following his 1895 book on "Soil", a landmark work by Franklin King was published in 1911 with the title: "Farmers of Forty Centuries: Or, Permanent Agriculture in China, Korea and Japan". Based on his research tour of the Far East, it describes how farmers in Asia have worked their land for over 4,000 years, without depleting the fertility of the soil. This book, and others like it, describe complete farming systems with a holistic approach, in which the farmer tries to imitate nature, rather than fighting a losing battle against it. Companion planting was advocated to make room for natural predators of crop pests.

In the book "Earthkeeping", Gordon Harrison states that:

> *Mature stable systems – those that have reached the so-called climax state of succession – are usually remarkably conservative of minerals. One ecologist calculated that a certain New Hampshire forest, using about 365 pounds of calcium per acre to nourish life within it, lost annually about 8 pounds per acre by run-off. Of this, 3 pounds was replaced by rain and the other 5 by fresh weathering of rock. Incidentally, it was observed that when trees were cut, vastly greater amounts of calcium washed away.*
>
> (Harrison, Earthkeeping)

Elsewhere the author states:

> *Diversity is associated with stability, as both cause and effect. Redundancy in a system is the best insurance against break-down.*

(Harrison, Earthkeeping)

Spatial arrangements in nature prevent the crowding of any species. By growing single crops, the farmer tries to artificially outdo natural arrangements. In nature, the available space tends to be occupied by as great a variety as the natural habitat allows. This is the mechanism by which nature eliminates disease and thus the extermination of any one species of plant or animal. Too many animals or plants of the same species in too little space, triggers a mechanism that either prevents breeding, or makes up for the excess through more rapid death.

All stable natural systems have these switches, but not all populations do. People, as noted, do not have any of these switches, if the rate at which the global population expands is anything to go by. Pests, notably insects, like the Colorado beetle, the locust, and rodents such as rats, have none. They are species whose populations are entirely regulated by outside forces, in relation to the availability of food. Pests of this kind produce far more offspring than is needed to keep the population stable or than can be normally supported. A farmer planting a crop of their favourite food creates a situation that results in a massive reduction of the pests' infant mortality rate. It does not require any cynicism to see the parallel with man.

> *The species that explodes its population is per definition a pest and the latest addition to the evergrowing list of injurious pests is, of course, man himself.*
>
> (Harrison, Earthkeeping)

In general we think of all living beings other than man as indivisible from nature. They are a part of the system and cannot be conceived of as being against nature. It is only man that can. To say that man is part of nature too is a generalisation. Added to this is the point that man clearly does not really understand very much about nature, mainly because of his greed. As a result, nature is exploited in a fashion that does not take care of the environment, especially among the so-called first world countries. The inhabitants of Asia have had fairly ecologically sound agricultural practices for well over 4,000 years. It is rather naïve to propose that only our modern standards have any scientific value, while denying this to those who have been practising scientifically sound methods for so long. The absence of a scientific doctrine for a particular method does not make it unscientific. And do we really believe that our own norms will stand the test of time?

Since Galileo and Newton, our theories have undergone so many changes already that such a notion of lasting scientific values is at best an exercise in self-deception. We do not really know when agriculture began and we assume from the ancient records that it is around the same time that man began to write. It is therefore perilous to assume that we can say anything definitive about the beginnings of agriculture, simply because we were not there to witness it.

The basic uncertainty is that we do not know what we mean by beginnings. Beginnings are always connected with ends, so that the state of fluctuation forms in fact the stability of the system. The I Ching is based on the same principle: changes are the only universal constant. Fluctuation implies relationship, because there is movement or flow between the living beings in an ecosystem. As man exploits nature, he disturbs the flow, by disharmoniously interfering with nature. Man is at war with nature, but he can do much better if he sees her as a lover. In the not too distant past, a momentum took hold that was to lead Western man more and more into the desire to control nature, rather than to assist her in a spirit of cooperation. Like any other animal, man can only continuously crop the surplus of plants for his food, if ever he wants to survive. Harvesting the wild can be regarded as another form of natural death within the natural system. Because man has been endowed with intelligence, he can fool nature. By adapting natural principles, like spacing and variety, man can create an environment which so resembles the natural state that pest and disease problems can be a thing of the past.

Meanwhile, in the prevalent system of agriculture, there exist alternative ways of getting rid of the pests and diseases and these deserve the urgent attention of the public. We also need to address the artificial barriers that prevent these new methods from becoming more widely adopted. In many countries, fees for registration of agricultural products for the control of pests, diseases or weeds represent a huge burden for small alternative businesses. With the threat of steep rises in such charges, there is a real risk that small manufacturers of such sustainable products will be pushed out of the market. Knowledge of this sort is readily available to everyone – and the big multi-nationals know this too. They usually debunk it as hogwash, the “return to the last century” or the dreaming of hippies. Sustainable agriculture does not represent a return to conservation-minded farming techniques without

modern technologies. Sustainable systems use modern equipment, certified seed of the self-seeding variety, soil and clean water, as well as livestock. Emphasis is placed on rotating crops, building up soil, diversifying crops and livestock and controlling pests naturally.

There is little incentive for pesticide manufacturers to produce simple natural products, since they yield low profits and could undermine sales of commercial brands requiring large-scale production in which they have invested heavily. Stringent laws governing fertilisers and pesticides make it harder for the alternative industry to have their products registered. Australian legislation, for example, specifies minimum levels of nitrogen, phosphorus and potassium and any product that falls below the minimum levels is not allowed as fertiliser. Similarly, a bug spray based on garlic, which has proved to be reasonably effective, cannot under present legislation be registered as a pesticide. This reeks of a violation of the laws governing trusts and monopoly. Politically, little or nothing is being done, although more and more evidence is becoming available on health issues connected with pesticide and herbicide use.

The Chemical Method

From a brochure published by the Western Australia Department of Agriculture, "Chemical Control of Insect Pests in Field Crops and Pasture" (1994), we learn the following:

> *The poison schedule for each product is indicated in the table. Extremely toxic chemicals are labelled as "dangerous poison" and belong to the class S7. The minimum protective clothing to be used when dealing with this class of chemicals is a suitable respirator and full protective clothing including a hood that covers the head.*
>
> (Quinn et al.)
>
> *Class S6, moderately toxic chemicals, is labelled "poison". A suitable respirator and protective clothing are required for spraying; goggles are also required for mixing the concentrate. For more detailed information on toxicities and safe handling, see Bulletin 4223 "Toxicity of pesticides" and Miscellaneous publication 8/88 "The toxicity of pesticides to wildlife".*
>
> (Quinn et al.)

There is, on top of that, a withholding period, which indicates the time the crop has to be held by the farmer before he is allowed to sell it in the market.

This is done to allow the sprays to be washed off by rain or to lose their toxicity over that period, as many modern pesticides have a short half-life. The products into which they are broken down are often equally toxic, but over a relatively short period only. All in all, not a rosy picture with regard to the safety of modern pesticides, herbicides and fungicides.

In Australia, as in many other countries, anyone who wants to trial some product, even if it contains no toxins, has to obtain a license to do so from the NRA, with the exception of anything you try in your own backyard. Many writers have pointed out the potential for bias and unfair restrictive practices where commercial representatives have key positions within legislative advisory bodies. In a competitive marketplace it is inevitably against the interests of such representatives to facilitate low-tech, small scale operations. This becomes even less likely at a time of global recession and substantial business losses.

Every day we read in the papers how crops fail because of diseases and pests. The devastation by the fruit fly of the pawpaw crop is a stark example. The growers' answer is found in the advice from the pesticide manufacturer, which is to spray ever deadlier poisons in ever greater quantities.

At the same time parents are regularly up in arms over the spraying of playgrounds, where toddlers – who are known to get into the dirt, to the point of sticking it in their mouths – only a few hours later happily do just that. Considering the poisonous nature of the chemicals used, the parents' wrath is certainly justified.

In Europe, the use of sprays in parks is strictly regulated, although some countries have more stringent rules than others. The European consumer no longer condones the massive use of sprays. In the Netherlands virtually every town and every city suburb has at least one health food store or supermarket, which indicates the level of consumer demand for organic products. Among the growers of food crops 12% have already made the switch to fully organic and sustainable methods while a further 40% are in the process of conversion. This means that over 50% of Dutch produce is grown without the use of chemical fertilisers, pesticides, herbicides and fungicides. Although the yields may be slightly smaller in the beginning, the money saved on chemicals more than compensates for the loss. During the past decade Denmark has introduced stricter laws on pesticide use and implemented National Action Plans for sustainable agriculture. Chemical controls of pests, diseases and

weeds, as well as chemical fertilisers are banned altogether.
In the USA, the USDA estimates that 60,000 to 100,000 farmers – about 3% of the nation´s total – are practising non-conventional agriculture, most of which can be labelled sustainable. Among the consumers there is a growing cross-section which question the environmental, social and economic impacts of conventional or chemical agriculture. As a consequence many farmers and other individuals are looking for alternative practices which could lead to increased sustainability.
Again in the USA, this time in California, consumers have mounted an attack on the manufacturers. This has resulted in the withdrawal of some 200 pesticide licenses. Although this is quite an achievement, much still needs to be done to stop the use of these substances altogether. Any ideas that promote other ways of looking at the pesticide and herbicide problems will unsurprisingly be received with hostility or inaction by the large agribusinesses. Their answer will be that genetic engineering and biological control already help the farmer to limit the use of highly toxic sprays. Although this looks at first sight to be a reasonable proposition, it is conveniently forgotten that these methods have still to prove their worth over a long period of time.

Genetic Engineering and Biological Control

At the moment, the push is for genetic engineering as well as biological control. In the UK, as well as the Netherlands, firms have been established where natural predators are bred on a large scale for a host of pests. This is of little significance for problems in Australia because of strict quarantine laws. The time needed to screen a predator for diseases would render them redundant for the treatment of pests. Moreover, the Australian CSIRO (Commonwealth Scientific and Industrial Research Organisation) has its own breeding programme.
But if the experience with the cane toad and fox in Australia is anything to go by, the introduction of a predator is fraught with its own difficulties. All too often the predator can become a pest in its own right.
It may be appropriate to say something here about biological control methods:

1. Difficulties in rearing. Some biological controls are difficult to rear. Fungi need specific moisture as well as a host. Predators need the same prey as they are supposed to control. Parasites do not survive

very long or are cannibalistic.

2. Difficulties in storage. Some fungi do not keep very well. Again, predators and parasites need a supply of their prey or hosts.
3. Effectiveness. Fungi may not be viable if applied in a dry environment. Although parasite life cycles are usually rapid, predators usually develop more slowly than pests. All three are very species-specific and as a consequence they are not always effective.
4. Cost. Many biological agents must be applied regularly from 1 to 4 weeks apart. They are expensive and sometimes not economically viable.
5. Resistance. Most do not produce resistance, with the exception of the fungi.

Gordon Harrison aptly describes the potential drawbacks of genetic engineering:

> *In the short view stability in natural systems remains as real and as valuable in maintaining the production of the earth, as instability is disastrous. The fact that one can see how it works may misleadingly suggest a machine that could be instantly reproduced.*
>
> (Harrison, Earthkeeping)

The farmer who tries to replace trees with corn and/or beans, quickly discovers that the abundant productivity of the forest cannot be simply transferred from the wood to crops. This leads to the drive to replace that abundance with “Super” and NPK products (Nitrogen, Phosphorus and Potassium) which may give accelerated growth, but in reality produce obese plants with little or no resistance. In turn these crops attract pests, which are the predators of the plant world. The conventional answer to pests is the use of poisonous chemical sprays, which, when no longer effective, are at present to be replaced by genetic engineering. The ramifications and repercussions of that path are at the moment little, if at all, understood. Fears that genetically implanted resistance to herbicides in food crops may cross over into the weeds that “need to be killed”, may indeed be well founded. Given the results so far, it can be safely stated that the technique has not yet lived up to the promises made and has not delivered the goods.

The introduction of the soil bacterium *Bacillus thuringiensis* looked at first to be very promising. It appeared to kill serious pests, like caterpillars, beetles and fly larvae, while being non-toxic to humans, spiders and other predators.

By transferring the genes and encoding these in crop plants, it was assumed that the plants themselves would be the insecticides. Hence “no-spray” cotton, potatoes or corn, cultivated in what was thought to be the Utopian farm.

Now it has to be admitted that what first looked so promising, is rapidly proving to be a lot less rosy. A handful of pests have already developed resistance against the “pesticide plant”, something the scientists had predicted would never happen. And, according to the latest laboratory reports, many other pests, like the Colorado beetle and some species of bud worm, have the potential to become resistant in the near future. The worry is really that by putting toxic genes into crops, the evolution of “superbugs”, resistant to an array of transgenic toxins, might be speeded up much more than previously thought.

The reaction is more of the same: to outwit evolution and forestall resistance. What seems dim-witted is the fact that what has already been shown not to work is now pursued with even more vigour. It is an observable fact that developments in the last 50 years in pest control have followed the same patterns, governed by the assumption that resistance could be overcome by either more or stronger versions of the same substances. The trend has now shifted to genetic engineering, backed by the same fallacious philosophy.

Although bacterial toxins are a lot more selective in what they kill, the burgeoning business they have generated is exactly why proponents of this technique worry about resistance. In the 1980s their sales increased more than fourfold, to the tune of over US $100 million. Although farmers have been abundantly spraying Bt, as it is called, for over 20 years, without there ever being any evidence of resistant insects, that state of affairs is fast becoming a thing of the past. Some scientists have always been sceptics. Whenever there is a new insecticide, people think of reasons why it is impossible for insects to become resistant to it. Others just assume they are going to become resistant, which is a safer viewpoint.

As early as 1985 the first resistant moths taken from grain storage bins in the Midwestern USA turned up. Then in 1990 scientists came across another moth, the diamondback, on Hawaiian cabbage and watercress. Consequently, resistant diamondbacks have been found as far afield as Florida, New York State, Japan and mainland Asia. Roughly a dozen breeding experiments have only served to confirm that a wide range of insects have the capacity to

develop resistance. On top of that, the toxins lose their potency in a couple of days after spraying, because of sunlight, which breaks them down rapidly. Thus the protection they provide is only very temporary.
Transgenic cotton and potatoes are already a fact and so are tomatoes and maize. While it looks as though this scenario is needed, to get rid of pests, the risk of resistant survivors passing on their resistance to their progeny increases with every generation. If it were not for transgenic plants, there would not be such an urgent need to deal with the resistance problem. Other critics accuse Monsanto, the producer of Bt, of dragging its feet. It is the old style of working – it has studied it to death. By the time resistance appears, it is too late. Scientists have to pay attention to clues that it is coming, or the battle is lost. It is scientific suicide to sit back and say, let's wait and see what is going on. At the same time, because of the complexities of the subject, scientists know little about which of their tactics might work. Scientists can model and discuss or try to run lab experiments, but it appears that they all agree that this is insufficient to come up with an answer that will allay the fears of the farmers and the general public.

Modern Farming Methods

Meanwhile in Australia, farmers are still locked in the position of having to use chemical sprays, with the exception of cotton growers. Some biological pest and weed control is being experimented with by the CSIRO. Too many farmers have the sword of bankruptcy hanging over their heads. The government has to heavily subsidise farming. The chemical companies have the last laugh, as they are pocketing the money spent on their not so effective "control".
In Australia, farming is threatening to destroy the topsoil and the native flora and fauna over vast areas. Topsoil is generally very thin, about 1 centimetre, and therefore prone to being washed away quite quickly. The problem is compounded by the use of fertiliser and bare soil cultivation, as the amount of organic matter in the soil is depleted to zero. The biggest problem is that the Australian landscape is not fit for European-style agriculture. The record of land clearing, to the tune of two football pitches per minute, or 500,000 ha. per year, is one of the worst in the world. In 1990 alone, 650,000 ha. were cleared, which amounts to more than half the area cleared in the Amazon basin. In the past 50 years, as much land has been cleared as in the 150 years since settlement. In 1995 permits were granted to clear more than a million

ha. in Queensland alone, 685,000 ha. of which was virgin bush.
Land clearance has been very costly in terms of environmental damage. Rainfall has been reduced by 14%, adding to the desertification of Australia at a rate the country really cannot afford to suffer. Biodiversity is another area that suffers greatly from European farming methods. Meanwhile the farmers consider it illogical to blame them. With the government giving tax incentives for the clearing of native bushland, their reaction is understandable. If instead the farmers were to receive tax breaks to manage the land sustainably, they would do so, according to Robert Hadler of the National Farmers Federation. It is significant that 20% of the farmers grow enough food to sustain the whole population of Australia. The other 80% are subject to international market forces where prices are set by the same companies that sell the seed of the hybrids which the farmers grow, squeezing them in a vice-like grip.
About 30% of the landholders are members of Landcare, a network of more than 2,000 regional conservation groups. Yet the use of alternatives to fertilisers and pesticides is severely hampered by the NRA (National Registration Authority), the Fertiliser Act, as well as the Agricultural Chemicals Act. The first is manned by people with interests in the fertiliser and chemical control industry, while the latter two forbid the use of alternatives.
What has happened so far is that farmers have been hitting pests as hard as possible with high doses of pesticides. The reasoning behind this is that if they are hit hard enough those that have increased resistance will also be killed. In this way they try to stop the passing on of resistance to the next generation. The problem with this is that it has to be done perfectly, which is well-nigh impossible in the field, as conditions in nature are always less than perfect. If there are any survivors from such high-dose strategy, they are going to be highly resistant. To date, no pesticide has ever been able to wipe out every member of an insect population. Experience has shown that it is the quickest way to create resistant pests. Tobacco bud worm types have already proved to be resistant to several species of Bt, even when sprayed simultaneously. The latest strategy involves Integrated Pest Management, or IPM, where sparingly used sprays, crop rotation, natural enemies and planting dates altered to miss pest breeding cycles, are used to avoid the development of pest resistance. Although this is a much more sensible

approach, it still misses the essential point.

A Real Alternative

If the whole issue is seen from the point of view that the pest is the problem, the wild goose chase will go on ad infinitum. There will be no solutions, only more lost battles, till the war with the pests is lost and the populations of the world succumb to famine. What has been lacking so far is the notion that the plant is the source of the problem. Although genetic engineering may seem to be tackling the issue from that pest, this is in fact simply an indirect route to attack the pest.

The conclusion to be drawn from this is that pest management needs a new approach. Both farmers and consumers want food that has been grown under optimum circumstances and conditions. This does not always mean the biggest grains, fruits and vegetables, without any blemishes. Optimum growth is what occurs in perfectly natural circumstances. It is possible only in a subtly and organically attuned environment. Plants will always attract pests and diseases. It is time we learned to accept that our unrealistic expectations in this regard have to be abandoned. Still, we have to address the problems of pests and diseases. It is imperative to look at what is really happening.

To fully understand the incidence of disease and the susceptibility to pests requires the abandonment of the idea of control per se, as a goal in itself. It requires a new paradigm that takes into account the facts, rather than conjecture, speculation and theory. Far from being rational, the efforts have always focused on the pest or disease as the problem. **In reality it is the plant that suffers from the pest or disease, therefore it is the plant that needs treatment.** This is the only rational approach. The causes have to be removed, and precisely how will be outlined below in the chapters on Soil Structure and on Plant Structure and Tissues. If this is not possible, as is the case with the massive crops the modern farmer needs to grow if his business is to be viable, then the homeopathic approach allows him to at least be free of toxic sprays. The very small doses make it safe, environmentally friendly, non-toxic, frugal with resources and extremely cheap, if only because one application is generally sufficient. Since treatment is directed at the plant, the immune system is enhanced, and this trait could very well be passed on to the next generation, without the need for genetic engineering. In addition, the pests do not develop resistance, since they are no longer the targets. The benefits to both the primary producer and the consumer are self-evident.

When a pest is sprayed, all it achieves is thinning the local pest population. This invites other members of the same species to fill the gap, so little more than a delay in pest attack is achieved. Homeopathic remedies treat the plant, not the pest or disease. This results in stronger, healthier plants, unacceptable to pests, and not prone to disease attack.

Inter-cropping with companion plants also deserves much more attention than it currently gets. Yet, very few farmers use the companion plant method, as harvesting machinery is not equipped for dual tasks. For monoculture farming, the homeopathic approach is the best possible answer.

Homeopathic medicine applies remedies in very small doses – much smaller than conventional and even biodynamic methods – and no harmful residual levels are introduced into the environment. Even highly toxic substances such as arsenic become virtually harmless in highly diluted form, but remain effective in plants that suffer from pest or disease attack. Plants only absorb microdoses of any substance; hence a homeopathic remedy is particularly adapted to the treatment of plants. Both as a spray and in the trickle system a remedy is absorbed in the shortest possible time. The leaves and the roots absorb a remedy equally well.

Homeopathic medicine is readily available worldwide. It has no shelf life limitations. Its effectiveness is unparalleled, as generally one dose is sufficient to give protection to the plant during its entire lifecycle, at least in annuals and biennials. Resistance is never a problem, because it aims at the plant, rather than the disease or pest. There are no risks of poisoning the environment, owing to both the smallness of the dose and its destruction by sunlight and U.V. light. No residues are left to plague other living entities and thus it is environmentally safe. The price is negligible, compared to chemical treatment or even biological control.

An example

The chrysanthemum grower uses, besides six biological controls such as predators, two Bt sprays and four to six pesticides. These have to be sprayed regularly, in periods from one to four weeks apart. If he uses homeopathic remedies, he needs a maximum of four remedies, which need to be sprayed only once and only if a pest attack is already happening. **If he uses a remedy made from the companion plant, he needs only a single remedy for all the problems met with in his crop and that only in a single dose.** The difference is obvious. Instead of using sprays between 12 to 16 times, this is

reduced to a maximum of four and a minimum of one. This is a reduction of at least 70% and at best 98% in the work involved, while the cost goes down more considerably, even when he needs four remedies. The savings are as much as 90% or higher. The only possible drawback lies in the antidotal relationship between the remedies used, which then may need repetition and will increase his costs by a small margin.

To understand what this entails with regard to the remedies, we have to look at their sources and the function they have in plant-life in general. We must also look at the immediate environment in which the plant grows. Thus above ground we have first of all the plants themselves, both the crop and the "weeds". A further component is the weather and the climate: the first, the local situation from day to day; the second, the weather pattern over a long period. Then the situation on the ground demands our attention: the soil type, its structure, the humus content, the pH, and the presence of weeds. The type of cultivation, i.e. bare soil, organic, permaculture, biodynamic, biological or conventional, plays an equally important role. In bare soil cultivation the fungi, bacteria and viruses which are in reality soil-borne and provide the function of decomposers in a natural setting, are forced to attack living plants to guarantee their survival.

Under the surface of the soil, microbial life is necessary for the processing of the organic nutrients so they become available to plants. In conventional agriculture the nutrients are applied in inorganic form which promotes leaching and makes it hard to maintain optimum nutrient levels throughout the life of the plant.

The remedies come from three different sources and their action is dependent on the source. The tissue salts or elements are, from their action, related to diseases, as is evident from the symptoms produced. The particular nutrient excesses and deficiencies and the relationships between the different nutrients and their associated remedies are described in detail; these include remedies which are inimical, complementary, antidotal or similar to each other. Potassium, for instance, fixes phosphorus, so we can therefore conclude that *Kalium* (Potassium) remedies antidote *Phosphorus*, stopping its action. Similarly, the two remedy types are inimical in substance and remedy form. With regard to the tissue salts it is noteworthy that the so-called macronutrients appear to have been given the most attention and have been presented as the most important, mainly because they are present in the

greatest quantity. If, however, we look at the micronutrients, we see that an imbalance has much more devastating effects on a plant than an imbalance of the NPK group. Just as a human being can have a deficiency in food and survive very well, a plant can handle an imbalance of the plant foods N, P or K much better than an imbalance of, for example, boron or molybdenum, which immediately produces more serious symptoms. I therefore propose that the micronutrients are regarded as essential remedies, while the members of the macronutrient group are given second rank importance in this materia medica.

The remedies derived from plants are more suited to pests, although some of them, especially the companion plants, are also effective against diseases, particularly on their companion. There they function like a constitutional remedy, as all symptoms that the companion produces are covered by the protective plant. An example is *Ocimum* (basil), which is the companion to tomato, and which will protect the tomato against all pests and diseases pertaining to it.

The remedies made from the invertebrates such as insects, arachnids and gastropods are either very specific or generic. *Helx-t.* is specific against snails and slugs, while *Bomb-pr.* is generic against caterpillars. Sometimes these remedies can also act against diseases, but only if the symptoms resemble the damage done by the pest from which they are made.

Soil, weather, crop and biome are the four legs of the stool of diagnosis, which can be extended with laboratory reports and microscopic evidence.

5. Soil Structure

True science means that the subject under investigation is studied in its totality. All attempts at isolation and reduction of the related parts render the scientific endeavour a meaningless mumbo jumbo of unrelated events. The homeopathic approach to the problems encountered in growing plants, whether grown for food or as an exercise in recreation, is scientific in the true sense of the word. It studies pests and diseases, as well as soil problems as symptoms of a totality within the environment. The totality includes the medium in which the plant grows, the climate and weather patterns, the availability of water, nutrients and the occurrence of other organisms in that whole environment, which is the local ecosystem.

Soil Horizons

Looking at a vertical section of soil, the first thing that attracts attention is the variation in colour and a certain amount of dead organic matter, a host of living entities, structure and porosity as well as the extent of weathering and erosion. These elements form distinct layers which are known as horizons. Three of these are usually focused on.

A. Topsoil

This is the upper region, where the greatest biological, physical and chemical activity takes place. The majority of living beings, organic matter and chemical reactions are found here. A host of insects, earthworms, protists, nematodes and decomposer organisms all contribute to the decomposition of leaves, twigs, bark and wood.

B. Second horizon

This is the layer where nutrients and small particles of organic matter are deposited by percolation, the process whereby substances move down through the soil. It is self-evident that much less organic matter is available in this layer, while erosion is reduced to a minimum.

C. Lowest horizon

The lowest horizon is where excess elements are leached out. It consists of larger particles of rock of any one kind, sand, lime or basalt, to name but a few, gravel and other debris. For the purpose of this book, only the two top layers are of significance.

Elimination

Depending on the amount of organic matter, a soil is either a sponge or it is

not. From an ecological point of view, bare soil cultivation, with little or no organic content, adds to global warming because it leads to poor water retention. A good soil acts as a sponge, cooling down the air directly above it, thus helping plants to cope better with heat and reducing evaporation, both from the soil and the plant. Reflection of heat is reduced to the minimum possible if sufficient organic matter is suspended in the soil, while the lack of this increases this reflection. The overall quality of the soil - whether it can be said to be active or passive - also depends on the content of organic matter. Modern agricultural practices have produced vast tracts of passive soils, because nutrients have been given priority in the growth of plants. Soil is, however, much more than a medium in which to suspend nutrients.

Dead soils – the ultimate in passivity – have no organic content. They also have little if any microbial life, which, for want of its proper food source, will attack living plants, creating a host of plant diseases, while the insects are more or less forced into a similar pattern of maintaining themselves. This perverse situation requires a drastic turnaround if the agricultural endeavour is to produce healthy crops and turn it into a viable enterprise, both economically and ecologically.

Soil is very dependent on light and air, however strange this may appear. Air and light are usually associated with above-ground phenomena. Yet without light and air, even in the soil, elements essential to life – for example, for the immune systems of plants – are missing. Science knows much more about the part of plants which grows above ground than about the roots, although this picture is changing fast. The processes in the roots themselves are fairly well known, but little is known about the interaction of soil and root. The emphasis is placed on the nutrients, while the pH determining the acidity or alkalinity of the soil is studied only in the context of the nutrient levels. Structure, biological activity and organic content are studied only in relation to these same levels, while the knowledge thus gathered is used only to “improve” the manufacture, synthetic or otherwise, of the nutrients.

The homeopathic approach is systemic. It does not compartmentalise the soil into plants and nutrients, nor does it limit itself to organic content and biomass. Although they are essential building blocks forming a healthy soil, other invisible elements, perceivable only indirectly by their effects, are included as well.

Organic Matter

This consists of plant debris, as we have seen, dead animals, insects, and other biological entities. This forms the food of a host of other insects, such as ants, woodlice, snails and slugs, many fungi (such as moulds and mildews), bacteria and viruses. These organisms are collectively known as decomposers; they break down organic matter into smaller particles and compounds, which in turn are processed into the various nutrients. They are always in relation to and in connection with the organisms which produce them. These organisms release these nutrients in a steady stream, to feed the plants. Fine particles of organic matter also cling to the roots and any plant is a decomposer in its own right. The roots, through the process of growth, bring light and air into the soil, together with the rest of the biomass. Microorganisms are of two types: aerobic, which need air to function properly; and anaerobic, which need carbon dioxide to function properly.

Ecosystems

Many of the “pests”, identified because of their habit of feeding on our food crops, are actually supposed to feed on organic debris, just like fungi, bacteria and viruses. In the absence of dead organic matter, these organisms are forced to feed on living plants, in order to restore the imbalance created by bare soil cultivation. As explained above in the section on The Natural Method, in nature, the sum total of events is designed to maintain balance. Balance means even spacing, because it will prevent the crowding of one particular species. Monocultures are designed to outdo natural arrangements, and in doing so they disrupt natural life cycles and increase the likelihood of large-scale pest and disease outbreaks. The rapid explosion of the rabbit population in Australia is a further example of the adverse consequences of subverting the stability of natural systems with their limiting switches. Given the flow and inter-relationships between living entities within an ecosystem, it is vital to interact with nature in as harmonious a way as possible. In this sense, harvesting from nature can be seen as another form of natural death within an ecosystem, provided the spacing between plants is kept as natural as possible. In this way nature can be fooled into believing that harvesting is an absolutely natural occurrence, similar to grazing and foraging animals. To this end it is imperative that the immediate surroundings of food crops are as natural as possible.

Deposition

In the soil horizons the nutrients are deposited. In general ten of the elements

are believed to be nutrients. These ten elements – carbon, hydrogen, nitrogen, oxygen, potassium, calcium, magnesium, phosphorus, sulphur and iron – were designated as essential elements for plant growth about one hundred years ago. In the early 1900s manganese was added. The element silicon has only recently, around 1985, been given the full attention it deserves. At present we know that copper, boron and molybdenum play an important role as well, while for some plants cobalt and aluminium are necessary. In speaking of inorganic nutrients, it follows that there must be organic forms as well. Little is said about them in the textbooks, maybe due to the fact that inorganic and organic chemistry are separate disciplines, with organic soil components receiving less attention.

Although chemical analysis is useful to determine the relative amounts of nutrients in certain stages of growth of the healthy plant in natural surroundings, it is by no means a definitive yardstick, as different plants have different requirements in different ecosystems. Deficiencies will create just as many problems as excesses. The homeopathic approach requires that which is natural to a particular ecosystem. In some the soil may be dead, as in the desert, or rich, as in the rainforest. Soils are as individual as the plants that they support. Thus the soil type is the first point of investigation, together with its structure and the amount of biomass. In the case of dead soils, much can be done to revive them by the selection of the appropriate remedy.

Nutrients

Most nutrients are essential for particular functions of plant life, be it photosynthesis, growth or metabolism. Some plants are characterised by unusually high or low concentrations of a particular nutrient or nutrients. It is therefore self-evident that different plants have different requirements even if grown in the same medium. Because of the complexity of the biomass it may appear that, for instance, alfalfa benefits from a nitrogen boost, as it is a nitrogen-fixing plant. However, alfalfa can only take up the nitrogen provided by soil bacteria which are redundant if there is a sudden boost of nitrogen, leading to the paradoxical result that the plant becomes nitrogen-deficient. Other plants, called C4 plants, require sodium instead of potassium, or at least to a greater extent. Atriplex, also known as saltbush, is one of several halophytes which require salt to grow properly. Salt is pumped from the leaf tissue through the stalk into large expanding bladder cells. Soybeans, when deprived of nickel, will develop toxic levels of urea, resulting in

necrosis in the leaf tips and reduced growth.
Some processes can be carried out using different types of inorganic ions in different plants. Osmosis and water balance can involve sodium, sulphur and potassium, for example (hence the relevance of remedies such as *Nat-m*. as well as *Sulph*. and the *Kaliums*). On the other hand an inorganic element may function as part of an essential biological molecule and as such is necessary and highly specific. As an example, the presence of magnesium in the chlorophyll molecule is essential to photosynthesis. Magnesium is the coordinating ion in the green pigment which absorbs the blue and red components of sunlight to provide energy for the oxidation of water into molecular oxygen and also the reduction of carbon dioxide into sugars.
Some elements are essential to the structure of cell membranes, while others control the function of these membranes, such as permeability. The enzyme systems in a plant require specific elements to be present; other elements provide the ionic tension required for certain biological reactions.
Deficiencies affect a wide variety of structures and functions, as do excesses. This is because they fill such basic needs and processes essential to healthy growth and strong immune systems in the plant body.
One of the key roles elements play is as catalysts in enzymatic processes. They can be an essential part in the enzyme structure. They can also function as activators and regulators of enzymes. Potassium, for instance, is thought to be involved in some 50 to 60 enzymes and is believed to regulate the production of some proteins. As biologists tend to study single elements, the interactions between compounds of elements like the nitrate of potassium or the phosphate of sodium are little understood. In the homeopathic scenario the differences observed between the action of different *Kalium* salts, for example, enable us to fine-tune the treatment to a greater degree of accuracy.
Not only can the change in shape of the enzyme expose or obstruct the reaction site, it will also be the cause of some forms of disease. Many of the biochemical activities of cells, such as starch and protein production, photosynthesis and respiration, fall within the class of oxidation-reduction processes. Some elements serve as structural components, such as calcium and silica. Calcium combines with pectic acid to form the lamella in the plant cell wall. Silica gives skeletal strength to a plant, as is found in the stems and the skin of seeds. Phosphorus is found in the sugar phosphate chains of both DNA and RNA, but its function is by no means limited to providing the

backbone of the genetic material. Backbone function is also found in the hardest parts of the plant, such as bark and cambium. Too much or too little phosphorus causes degeneration, a generative function as the word implies. Nitrogen is an essential component of amino-acids, chlorophyll and nucleotides. Sulphur is also found in two amino acids, thus forming a component of some proteins.

Nutrients in Agriculture

The modern-day farmer is faced with ever-larger problems in producing a crop and still making enough money. Most need heavy subsidies just to break even. Since the beginning of the promising chemical revolution in agriculture, the problems have only increased. While initially producing bigger crops, farmers have begun to see their lands now producing ever smaller crops, with ever greater losses to pests and diseases. Where the traditional farmer typically lost 5–10% of his crop, his modern equivalent is happy if his losses stay below the 30% mark.

The soil has become poorer and the amounts of fertiliser added have become larger almost every year. The added problems of pests and diseases have seen farmers' bills soaring even higher, since chemical pest, disease and weed control measures must be repeatedly applied, to still have a minimal effect. Even the departments of agriculture agree that commercial fertilisers are far from ideal.

Nutrients in the form of commercial fertilisers have several drawbacks associated with their use. We shall name them first, before we deal with the other problems associated with the excesses and deficiencies of these chemically synthesised elements and compounds. Aspects such as volatilisation, leaching, time of application and the evenness of spreading will be considered.

A. Volatilisation

Our answer is that sensible applications of manure and compost, together with bio-dynamic soil preparations, will remove the risk of volatilisation, since urea, ammonia and nitrogen form part of the manure and compost in the exact balanced amounts the plant needs.

B. Leaching

The greater the organic content, the faster the conversion.

Because of the greater acidifying effect of fertilisers such as ammonium sulphate, the ammonium nitrogen in these sources is less rapidly

nitrified to nitrate than with less acidifying sources such as urea.

(Mason, Farmnote 27/96)

Drying out of soils can easily be avoided when compost is added in sufficient quantities. The application of compost and green manure also reduces the occurrence of bacterial, viral and fungal diseases. These will be kept busy decomposing plant debris and compost. Moreover, leaching is reduced to almost nil if manure and compost are added, while the need for extra application of chemical fertilisers is also removed.

C. Time of application

It is naturally better to use biodynamic sprays than chemical fertilisers, since soil microbial life is important in the processing of which renders them more digestible to plants. To engage this microbial life in their normal occupation – digestion of organic matter – we need to add compost and manure rather than try to adjust the fertiliser demands by adding chemicals in unbalanced proportions.

D. Evenness of spreading

All these problems disappear when the farmer switches from commercial fertiliser to the one produced by his livestock for free, and ages it properly. Old manure does not smell bad, attracts no flies and can be easily spread on the fields. When processed into B-500, cow manure can be used as a “top-dressing” if this is desirable or necessary. Its liquid form does not result in volatilisation, while a properly structured soil does not allow leaching.

E. Other considerations

Of course subsoiling and ripping are nullified by the tractor riding in the furrows. They are thus only a measure to be executed with draught animals, the best suited being bulls. For such a large plough, a sixspan of bulls is necessary. Impractical and time-consuming, ripping is really not an option here. Such soils will be best improved by raising the organic content, since this will greatly improve drainage and break up the hardpan, if not too deep below the topsoil. Worms are better than ploughs in breaking up the soil and therefore it is only logical to encourage their presence by adding humus, compost and old manure.

Considering the ease a farmer has when using the homeopathic approach, combined with the right biodynamic preparations, it should be relatively straightforward to persuade the farmers that this approach is superior. Generally it is the farmers’ wives who convince their husbands. We may

have to rely on them to convince their husbands of this way.
The only other convincing argument is that it will save the farmer a lot of money. However, as the Dutch saying goes: “The farmer will never eat what he does not know.” Having been led to believe that the only alternative to the modern chemical approach is a return to the methods of his grandfather´s day, he dismisses anything that to him reeks of “hippies, greens and other long-haired workshy folk”.
Little do they realise that this is the future of farming, doing away with outdated ideas. This is science fiction to most, but science fact to its users and those involved in its development. The concepts and methods are truly modern and innovative, reaching beyond the concepts of those who think in mechanistic, rather than dynamic terms.
While mechanistic terms are inadequate to explain the dynamic processes at work, they do have a practical function; they help identify some individual types of problems, where specific signs and symptoms may be hard to distinguish from each other.
Deficiencies demand their own terminology, explaining the visible signs and describing what has happened and is happening. Let us have a look at this terminology and see whether we can discover the differences and similarities.

G. Functions of the essential elements supplied by the soil

Soil science typically considers only thirteen mineral nutrients in the soil. These are generally divided into groups as follows: three primary macronutrients (nitrogen, phosphorus and potassium); three secondary macronutrients (sulphur, calcium and magnesium); and seven further micronutrients, needed in much smaller amounts, namely boron, molybdenum, iron, zinc, manganese, copper and chlorine.
In fact, other chemical elements not included in the standard list have significant roles to play in plant life, silicon being a prime example. The information below begins with a discussion of the importance of silicon, then sumarises orthodox descriptions of the macro- and micronutrients conventionally listed. It should be noted that these may not tell the whole story, since the orthodox approach is typically based on static rather than dynamic perspectives.

Silicon (Si)

The element silicon, along with its naturally occurring silicon oxide, is rarely even mentioned within conventional agriculture. It is a formative substance.

By “formative” we mean here the development of the plant, which is entirely regulated by the moon. In this connection it is important to remember that *Silicea* has its aggravations at the new- and full-moon phases generally, while in some it may have an influence during the first and last quarters also. Without silicon no plant stays upright and it is of equal importance for germination and maintenance of the plant during its entire lifecycle. The flaws and shortcomings of the orthodox approach also do not consider the dynamics of plant life in general, nor do they look at anything specific, except that which confirms their prejudices. Nonetheless, we give here the orthodox notions regarding the micro- and macronutrients. As usual, they begin with the macronutrients.

Nitrogen (N)

This vital element is an essential component of all amino acids, and therefore all proteins. Since all enzymes are also proteins, nitrogen is hence also central to the functioning of plant growth and metabolism; enzymes reduce the energy required to carry out tasks. It is also a constituent of the nucleic acids DNA and RNA required for cell division and reproduction.

6. Plant Structure and Tissues

As the plant body is “upside down”, the roots being the equivalent of the mouth, the stem is the backbone, while the leaves form the respiratory, digestive and urinary systems. Therefore we begin at the bottom, just like in a normal materia medica, with the head.

The Roots

The roots fulfil diverse functions, not the least of which is the anchoring of the plant. They also take up nutrients and water. In addition, they anchor the topsoil, thus reducing erosion. Two other functions are storage and conduction. Most roots are important storage organs. Examples are the potato, the carrot, sugarbeet and onion. The foods are manufactured above ground, in photosynthesis, and are transported through the phloem to the roots where they are stored. Sometimes the roots themselves are the food, but generally it is digested and the products of this process are channelled back through the xylem to the above-ground parts to be processed again. The phloem and xylem form the capillary system, comparable to the circulation in humans.

In the biennials – plants that require two years to reach maturity – great quantities of food are stored in the roots in the first year. In the second year these are used to produce flowers and fruits or seeds.

Water and nutrients are absorbed by the roots and move through the xylem to the leaves. Some hormones are produced in the roots, such as cytokinins and gibberellins. These are necessary for the growth and development of the plant. Every species has its own root structure. In addition, the ability of plants to develop roots in different types of earth varies greatly. The requirements for foodstuffs also differ within the growth cycle.

The different root systems can be classified easily. The primary root comes from the embryo of the seed. In some plants this becomes a taproot, growing vertically downward with lateral roots developing out of it. The older lateral roots are situated near the base of the root, where root and stem meet. The younger ones are found near the tip. This taproot system is found in dicots (dicotyledons) and gymnosperms. In monocots (monocotyledons) the primary root is short-lived and additional roots form from the stem. These, together with the lateral roots, form a fibrous root system. In such a system all roots are equally important. The extent of a root system is dependent on a

variety of factors, which include the moisture content, temperature and composition of the soil. Some roots occupy a much larger space underground than the whole of the plant above ground. Alfalfa roots go to a depth of 6 meters or more. One 4-month-old rye plant had roots with a surface area of 639 m_2, or 130 times the area of the above-ground shoots, yet the roots covered only six litres of soil.

Many roots grow continuously, only stopping at low temperatures or during drought. The root always follows the path of least resistance, seeking spaces that earlier plant roots have created for it before they died and rotted. This has the further advantage of providing organic matter in which roots grow better. The root tip is covered by a cap, a mass of thimble-like cells, which protect the stem behind it and help to penetrate the soil. As it grows, the root cap pushes forward, while the cells in its periphery are sloughed off. These cells and the root tip are covered by a slimy sheath, the mucigel, which lubricates the root, to provide easy passage. In disease this mucigel may be dry, or extend over the whole root.

The most familiar type of root for food storage is probably the tuber, as found in the potato. When grown from seed, the tubers form at the end of what is called the stolon. Cuttings of tubers used for propagation give rise to tubers found at the end of rhizomes.

A plant bulb is not a root but a compressed shoot with a small stem surrounded by many modified leaves. These leaves have a thickened lower end very similar to bud scales, and this is used to store nutrients. Examples are the ordinary onion, crocus, gladiolus and tulip. Kohlrabi is a good example of a plant that uses its above-ground, thick, fleshy stem to store nutrients, rather than a root or bulb.

Stems

The primary tissues of stems have growth periods which complement those of the roots. The latter grow during the dark half of the moon while the former have their phase of growth during the light half, thus enabling the plant to grow evenly. The stem grows in a manner different from the root. Roots grow through cell division and elongation. A stem grows in the first growth phase through internodal extension, then also through cell division. The stem can grow either as a more or less continuous hollow cylinder, as a cylinder of discrete strands, or as a system of strands scattered throughout the

ground tissue. In most ferns the phloem is found outside the xylem; in some monocot plants it is inside the xylem. Collateral vascular bundles, in which the xylem and phloem face each other, are widespread in gymnosperms and angiosperms.

Leaves

In dicots the leaves have a blade and petiole; the blade is sometimes divided into leaflets. Stomata (pores) are generally more abundant on the upper surface. The mesophyll is a photosynthetic tissue, permeated by airspace and veins. The latter are made by phloem and xylem, embedded in dense “pith”, the xylem usually lying over the phloem. Leaves are sheathed in an epidermis (skin) covered with a waxy cuticle. Most monocots, which include grasses, have leaves made up of a blade and a sheath, encircling the stem. The leaves of C3 and C4 plants have different anatomical properties because they are adapted to the absorption of different carbon compounds. Shoots are a collective of stems and leaves that have physical and developmental associations. The capillary or vascular system will branch off in each node, to provide the leaves with a connection through which nutrients, starch and protein can be transported in either direction.

Photosynthesis

Photosynthesis is the process whereby light energy is converted into chemical energy, enabling carbon to be fixed into starch. The standard equation is:

$6\ CO_2 + 12\ H_2O + \text{light} \rightarrow C_6H_{12}O_6 + 6\ H_2O + 6\ O_2$

The pigments that enable photosynthesis are chlorophyll and carotenoids, grouped in units called photosystems. In plants, two sets of photosystems work together to extract electrons from water. These electrons are then used in the reactions that turn carbon dioxide into glucose. Photosynthesis is vital not only for plants, by producing the food they need, but also for virtually all other organisms, producing the oxygen they require as a by-product (as well as directly or indirectly supplying energy and carbon).

Flowers

The vegetative shoot also carries the organs of reproduction. The flowers contain either male or female reproductive organs, or they are androgynous. The male sex characteristic of a plant is the stamen, which produces the pollen – the plant equivalent of sperm. The female sex characteristic is the ovary, which brings forth the seed after pollination.

7. Using Homeopathic Remedies

When using homeopathy, one is giving a very small dose of a substance, possibly a poison, which in a large dose would cause similar symptoms to the illness presented for treatment. There is no strength to a homeopathic preparation other than what is known as potency. Unlike conventional medicines or agricultural treatments, the potency is not determined by the gross amount of active substance present. Instead it is determined by the number of times it has been ground, diluted and shaken according to the homeopathic method.

The remedies stimulate the organism's intrinsic defensive mechanism; once the initial dose has acted on the plant, a series of internal responses occur to re-establish the balance of vital forces within it. Homeopathic treatments act as a trigger and, for this reason, do not usually need frequent reapplication. In fact, overuse can counter the benefits achieved and in many cases can worsen the problem.

Types of Remedies

These chapters describe remedies made from mineral, plant and animal sources, as well as a number of microorganisms. The remedies can be grouped as follows:

Mineral remedies

Chapter 9 describes the use of 31 mineral remedies, including both pure elements and compounds, to treat nutrient imbalances. A number of these have additional roles in the treatment of infectious diseases, injuries and weed problems, along with a number of other organic and inorganic remedy substances (such as *Carbo vegetabilis*, *Natrium salicylicum*, *Pyrethrum*) discussed in Chapters 11 to 15. Some of these are derived from plants, so could also be placed in the next category.

Plant remedies

A range of plant species are used in potentised form for the treatment of plants within particular botanical families and for general or particular conditions. As explained in the introductory chapters, these are prescribed along standard homeopathic lines, depending on the nature of the problem to be treated. Some are familiar faces from the homeopathic materia medica (such as *Belladonna*, *Bovista*, and *Thuja*), applied to the specific difficulties faced by gardeners and farmers. Others have been introduced here because of

their usefulness as companion plants (see Chapter 12) or on the basis of traditional herbal and horticultural practice. Where individual constituents influence the remedy characteristics, these are discussed (for example, the reputed insecticidal properties of camphor in *Camphora* and *Tanacetum*).

Animal remedies

Most of the animal remedies described in this book are predators or parasites of plant pests. Using information from Integrated Pest Management (see below) and an adaptation of homeopathic principles, these are prescribed to counter the damage and disease in plants caused by their prey species. These include:

Insect predators	*Chrysopidae* spp. (green lacewings, gauzeflies) *Coccinella septempunctata* (ladybirds, sunchafers) *Syrphidae* spp. (hoverflies, syrphid flies)
Insect parasites	*Aphidius* spp.(parasitic wasps of aphid hosts) *Encarsia formosa* (parasitic wasps of greenhouse whitefly)
Arachnid predators:	
Spiders	*Latrodectus* spp. (including *Theridion*) *Tarentula hispanica* and *cubensis*
Mites	*Amblyseius* spp. (mite predators of pest mites)

A smaller number are prepared from pest species themselves, and are used to treat plants infested with the same creature or causing similar symptoms:

Bombyx processionea (Oak processionary moth)
Cantharis (Spanish fly, a blister beetle)
Coccus cacti (cochineal, a soft scale pest)
Helix tosta (snails)
Oniscus and Porcellio spp. (woodlice, slaters)

The remedy *Trombidium muscae domesticae* is an interesting special case, since the red velvet mite species from which it is prepared does not adversely affect plants (and probably not even its animal hosts). Nevertheless, it can still be prescribed on homeopathic principles for mite problems. (See Chapter 10.7 for more details.)

Microorganism remedies

Bacterial, viral or fungal pathogens can be used in potentised form to treat

conditions similar to those they cause in their natural state. As a fungus, the homeopathic remedy *Bovista* has been suggested to treat fungal diseases, but interestingly also mite infestations (see Chapter 10.7). The use of *Secale* and *Ustilago* to treat plants from the *Gramineae/Poaceae* family is reported in Chapter 11.

Bacillus thuringiensis is an example of a microorganism used as a biological alternative to pesticides; it causes disease in insect pests. Its use as a potentised remedy is explained in Chapter 10.1. Several fungi used in IPM (see below) have also been potentised.

Application

You must always follow the application guidelines carefully. Homeopathic remedies are easy to apply on both small plots and in commercial agriculture, but there are some basic rules that must be followed. Any liquid dispensing device can be used: watering can, backpack sprayer, boomspray, etc. They can be injected into reticulation systems at the tank or the pump. On large areas some calculation of watering rates may be necessary to administer the correct dose.

Do not mix homeopathic medicine with anything other than water. Do not use commercial herbicides, pesticides, fungicides or fertilisers for at least 10 days after applying homeopathic remedies: otherwise all the positive effects may be nullified.

Excessively acidic or alkaline water may affect the remedy's action, usually just slowing it down. Make sure your spraying equipment is not contaminated. Residues of agricultural chemicals may antidote the remedy. If in doubt, rinse well with the hottest water possible, or steam clean.

Application Rates

The dosages are approximate and may vary according to different circumstances and experiences.

1st: 500 ml/500 l per hectare or 10 ml/10 l on small areas
2nd: 250 ml/500 l per hectare or 5 ml/10 l on small areas
3rd: 125 ml/500 l per hectare or 1 ml/10 l on small areas

Procedure

First put in the remedy, then add the water. This is sufficient for mixing evenly. Where this is impractical, for example in large tanks, spend a minute or two stirring it with a large stick.

The most important part: each homeopathic remedy should be allowed to act

before it is repeated. In the event of a worsening of the symptoms, usually visible within 48 hours, antidoting should be resorted to.

Antidoting

If an adverse reaction is elicited by the remedy, look up the antidotes under the description of the remedy which you have applied, and use a single application. Where you do not have the antidote in your possession, apply the third application rate (see above) of the same remedy which you have used to bring out the effect.

Potency

It is recommended that the 6X potency is used initially. This contains a tiny amount of the original remedy substance. If you are sure the remedy fits, but the 6X does not work, try the 30X potency and see what happens. If this too fails, retake the case and prescribe a different remedy..

Suppliers

The homeopathic preparations described in this book for the treatment of plants and soil are available individually or as a set from Narayana Publishers.

For more information, contact:

Narayana Publishers
Blumenplatz 2
79400 Kandern
Germany
Tel: +49 7626 974 9700
Fax: +49 7626 974 9709
info@narayana-publishers.com
www.narayana-publishers.com

8. Treatment of Plant Diseases Arising from Nutrient Imbalances

Ammonium carbonicum

Sesqui carbonate of ammonia, *Sal volatile*. $[(NH_4)2CO_3]CO_2$. Solution, distilled in water.

A. General

A condition of under oxygenation. Plants are greatly affected by cold air, wet, stormy weather and rain. They pick up when weather gets warmer. Capillary engorgement results in sap loss. Flowers are premature, photosynthesis defective. Chlorophyll deficiency, as in chlorosis, reduces the capacity to incorporate simple molecules into complex compounds such as starch. Chlorosis is the lack of pigment giving the leaves a pale green or yellow colour.

Lack of chlorophyll induces the plant to shed leaves since it cannot afford to expend food on leaves that do not function. In deciduous trees, this happens every fall and the tree goes dormant during the winter. In other plants, chlorosis indicates disease, such as blotch, barley yellow dwarf virus, stripe rust, halo spot, spot blotch, yellow spot and nutrition imbalances, such as manganese, zinc or iron deficiency. When *Ammonium carbonicum* is indicated, there are many symptoms. The roots are usually dry, sometimes showing vesicles or swellings. The plant usually requires frequent watering, but nutrients are not absorbed, thus adding to the difficulties of photosynthesis. Respiration is particularly difficult. Nitrogen fixation in beans and peas may be affected by a molybdenum deficiency.

When excess ammonium is applied, it turns to nitrogenous nutrient. This in turn fixes sulphur, or in other words it antidotes, or is inimical. Sulphur then becomes deficient in the plant. *Ammonium-sulphuricum*. is indicated in such problems as it will modify the nitrogenous action and augment the action of the sulphur component. The relationship between nitrogen and sulphur is important in the diseases and symptoms that are produced when either is excessive or deficient.

Rusts

The rusts are dark red, as in *Belladonna*. The flowers appear premature, and

pollinate heavily, or not at all. The female parts do not function properly and fruit setting is incomplete due to this.

B. Clinical

Capillary engorgement, photosynthesis defective. Roots dark red with orange surrounds. Stem rusts, stripe rust, leaf rust, aphids, banana rust thrips.

C. Appearance

The rust manifests itself as pustules full of dark, reddish brown powdery spores on stems and leaves (both sides), sheaths and heads. The spores fall off easily, the pustules are oval and elongated. Surrounding leaf or stem surfaces are usually ruptured. Towards the end of the season, as the plant matures, the pustules produce black spores. Wheat stem rust also affects barley, durum and triticale. The fungus survives on green hosts such as grasses.

On grains

Rust assumes epidemic proportions when summer/autumn rains allow wheat or barley rust to survive throughout the summer. This disease can cause record crop loss within very short time at the end of a season. Warm (15-30°C/ 60-85°F) and humid conditions favour this disease. There are resistant varieties, but rust is versatile and develops new strains to survive. There are no chemical treatments for seed, and foliar spray is very costly. *Am-c*. or *Bell*. will quickly put an end to rust infection. Spraying is done early in the season (see also *Acon*.).

D. Flowers and fruits

Pumpkin

Rust also attacks heads, thus making flowering problematic, and fruit setting nigh impossible, resulting in total crop loss over a short period. Critical nitrate to nitrogen levels in the petioles of pumpkin at early fruiting lie at 4000 mg/kg for irrigated and 8000-8400mg/kg for dry land crops.

Fig. 1.0 Wheat leaf rust on wheat, *Puccinia triticinia*

E. Water needs

High.

F. Relationship

Antidote to: *Mang.*, *Zinc.*, *Ferr.*, *Sulph.*, *Sul-ac.*, *Moly.*

Compare: *Am-s.*, *Nit-ac.*, *Kali-n.*

See also: *Phos.*, *Kaliums*, *Calcareas*, *Magnesiums*, *Ferrums*, *Mang.*, *Cupr.*, *Zinc.*, *Natriums*. *Am-c.* affects all these when in excess.

Complementary: *Moly.*

Borax

Borax veneta. *Natrium biboraticum*, $Na_2B_4O_7$. Trituration and solution.

A. General

Boron stands at the head of group 3 in the periodic table of Mendeleev. Boron is known as a micronutrient because it is needed by plants in minimal amounts compared to the total amount of each of the other elements and the total aggregate of all the nutrients. Owing to its apparently insignificant position it has been overlooked until recent times. In fact, it is precisely because such small amounts are required that the micro-nutrients are so important in the life of plants. They give better results when applied separately. They form the backbone in many respects. The so-called plant foods nitrogen, potassium and phosphorus, although important, merely support its daily maintenance. A plant can live relatively long without too much of any of these three substances, while the inability to take up the microelements will result in severe symptoms in a relatively short time,

resembling serious disease.
Like *Alumina* and *Alumen*, with which *Borax* has a close relationship (since they belong to the same group of elements), the symptoms of *Borax* are clear-cut. The bulk of the symptoms come from toxicity reports from agricultural departments.

B. Boron toxicity

Toxicity with borax was not recognised until the 1980s. This is partly because it causes slightly different symptoms in different plant families, sometimes resembling other diseases.
In grains, barley is the only type which appears to show evidence of this problem, with symptoms resembling net blotch. The symptoms appear as dark brown spots on the edges and tip of the leafblade, turning necrotic. In net blotch the spots do not enlarge, but in borax toxicity they become so large and numerous that the leaves die. Moreover net blotch is surrounded by a chlorotic halo, whereas boron toxicity is not.
On cassavas, the symptoms resemble those of aluminium toxicity. The development follows a particular pattern of yellow to white spots, mainly along the leaf margins towards the tip. These are surrounded by a dark halo, become necrotic and give the leaves a jagged edge. Boron excess stunts growth and can also produce a diffused chlorosis, beginning at the tip of senescent leaves. Plants may recover later in life. Boron toxicity occurs on highly alkaline soils, as opposed to aluminium toxicity which is dependent on high acidity.

C. Boron deficiency

A deficiency of boron also causes stunted growth (dwarfing) and slight chlorosis. Plants recover quickly without reductions in size and yield. (Krochmal and Samuels, 1968)

D. Clinical

Boron imbalances.

Calcarea carbonica

Impure calcium carbonate. $CaCO_3$. Trituration of the middle layer of oyster shells or carbonate of lime.

A. General

Calcarea is one of the greatest monuments of Hahnemann's genius. His method of preparing insoluble substances brought to light in this

instance a whole world of therapeutic power, formerly unknown.

(Clarke)

It is essential to have an intimate acquaintance with the *Calc*. preparations, as they are pivotal to the understanding of homeopathy as a whole and its application in agriculture in particular. *Calc*. preparations have a wide range and a deep action. Handle with care is not an unnecessary precaution. Too much dosing can trigger severe aggravation in the crop and it is difficult to counteract it, as *Calc*. is an important constituent in the plant body. Calcium, being a building block in plants, has a consequent low mobility. As Teste remarks in his materia medica:

I know that carbonate of lime, phosphorus, phosphoric acid and all other substances which enter largely into the composition of the human body, exercise a deep and pervasive action on the organism; but this is, it strikes me, an additional reason why it should not be administered at random.

(Teste)

Calc. is closely related to *Belladonna* of which it is the chronic counterpart. Repeated occurrence of rust in cereal crops, may point to either calcium deficiency or excess in the soil. Demands for more irrigation are another indication for *Calc*.

In highly calcareous soils as found in the arid areas of the world, potassium applications can increase the yield in sugar beet by up to 79%.

Soils saturated in calcium and magnesium severely depress potassium uptake regardless of the amount of potassium applied.

Calc. is worse from cold, and better from heat. It corresponds to plants that are force-fed NPK, resulting in obesity, sluggish capillaries and lax fibre. Large features, pale, chalky look and feel in stems and leaves. Rather bloated than solid. *Calc*. has been used both on acid and alkaline soils. It proved more successful for the latter than the former.

B. Calcium deficiency

The root systems of several species of cassava are very sensitive to calcium deficiency. (Forno et al. 1976). Without sufficient calcium, root growth is severely restricted, resulting in necrosis and decomposition. Above ground, the leaves will burn and curl upwards at the tip, although this is not always observed (see also *Alumina* and *Alumen*). The *Leguminosae*/*Fabaceae* are more prone to show symptoms.

Appearance with potassium deficiency

The growing tips die at the 2-4 leaf stage. Older plants show gradual capillary collapse, beginning at the leaftips of the youngest leaves. Mottling of older leaves, folding backwards. Veins and edges remain green. Interveinal areas turn yellow-brown. Collapse of the flowering stalk; flowers wither and die. The leaves turn chlorotic and die. The interveinal spaces on the back of the leaves are pink.

C. Calcium shock

Sometimes the potting mix is so acidic that transplants cause calcium shock. *Calc*. can work miracles in such cases. *Calc*. must not, however, be used indiscriminately, as severe reactions can cause complete crop loss. Caution should be written in bold type over the *Calc*. picture. Deep-acting mineral remedies like the *Calc*. preparations require careful observation, frugal application, and close monitoring. By closely following instructions for application, it can do wonders for plants that do not thrive. In annuals like cereals, one dose in the entire life-cycle of the crop is the maximum allowed. In trees, no more than once per year, with a maximum of three applications in a row. In shrubs, once per 2-3 years, and no more than three times in total. Excessive liming can induce deficiencies of potassium, manganese, magnesium, iron, copper or zinc. Treatment with calcium usually does not have any bearing on the yields of pasture; it is, however, a suitable carrier for both phosphorus and sulphur.

When the soil is rich in calcium, as in the southwest of Western Australia, many species of plants do not thrive. Limestone sands are too alkaline for many species. An acid manure such as chicken or pig manure can bring pH levels back to normal. *Calc*. will greatly benefit plants that have difficulty in alkaline soils, although it is ecologically unsound practice to grow plants unsuited to this soil type.

It may be given on soils either rich or deficient in calcium when symptoms present themselves or return after an interval.

Appearance with potassium shock

Red margins on leaves, leaves yellow, sometimes swollen. Pale, chalky. Flowers too early, premature. Sterility of seed in fruit crops. Fruits do not set or mature. Spongy feel in seeds and fruits. No firmness, plant appears bloated, obese.

D. Clinical

Calcium deficiency as in bitter pit in apples. Calcium excess on calcium-rich soils. Plants obese, with lax fibre, pale, chalky look in stems and leaves. Damping off. Nitrogen excess. Anthracnose (Fig. 1.1).

Fig. 1.1 *Bean anthracnose, Colletotrichum lindemuthianum*

E. Appearance

Growth is irregular, late starters. Weaker in cold weather and rainy storms. Damping off in cereals and turf. Plants will look pale and collapse. Over-seeding will produce wrinkled, twisted and distorted plants. Roots short and brown. Heavy use of nitrogen fertilisers creates soft turf and cereals which are more susceptible to attack. Nitrogen applied during establishment stage leads to sudden collapse of seedlings. Avoid watering late in the day so that soil is dry at night.

F. Microscopic

Obese cells, thin cell walls, accumulation of salts, high water content.

G. Chemical

Excess water and nitrogen. Reduced protein levels.

H. Flowers and fruits

Reduced flowering period. Flowers do not last. Premature fruit dropping, sterility, little or no seed or fruit. Fruits do not mature, small, shrivelled.

I. Water needs

Very thirsty, wilt easily when internal water is used up during dry spells.

J. Relationship

Antidote to: *Mang.*, *Mag.*, *Kali.*, *Ferr.*, *Cupr.*, *Zinc.*
Complementary: *Phos.*, *Sulph.*, *Sul-ac.*
Inimical: *Kali.*, *Phos.* (to *Calcareas* except in *Calc-p.)*, *Magnesiums*, *Mang.*, *Ferr.*, *Cupr.*, *Zinc.*
Antidoted by: *Sulph.* (except *Calc-s.*)

Calcarea fluorica

Fluorspar. Fluorite. Calcium fluoride. CaF_2. Trituration.

A. General

Calc-f. is Schuessler´s “bone salt”. It is found at the surfaces of bones, in the enamel of teeth, in elastic fibres and the cells of the epidermis. These latter have significance in plant use. Induration, threatening suppuration. Spot blotch, stem rot and stem nematode. The skin or bark is dry and harsh.

B. Clinical

Affections on the stems, trunks and twigs. Hard, swollen nodes. Stem rot, spot blotch, stem end rot in avocado, stem nematode.

C. Appearance

Stem nematode (*Meloidogyne* spp.)
Bases of plants swollen. Tillers may be distorted, stunted, and more numerous than healthy plants. The nematode causes a brown rot at the base of the plants which tend to die prematurely.
Spot blotch (*Septoria* spp.)
Dark brown oblong spots or lesions on leaves and sheaths, often with yellow surrounds.
(Fig. 2)

Fig. 2 Septoria leaf spot and canker, *Septoria musiva*
Stem nodes infected with rot. This disease can lead to black point.
Stem rot (*Dothiorella* spp.)

The fungus causing this disease lives on dead twigs and leaves. Spores are splashed onto fruit in rainy weather. Spores remain dormant until the fruit is ripening. A dark brown to black rot begins at the stem end and gradually progresses down the fruit.

D. Flowers and fruits

Barley florets die, black point symptoms on grain, rot on avocados.

E. Water needs

Normal.

F. Relationship

Antidote to: *Ferr.*, *Mag.*, *Mang.*, *Zinc*.
Inimical: *Mag.*, *Phos.*
Antidoted by: *Sulph.*
Complementary: *Phos.*, *Sulph.*

Calcarea phosphorica

(Tri)calcium phosphate. Phosphate of lime. $Ca_3(PO_4)_2$. Trituration.

A. General

Calc-p. strongly resembles *Calc.* but is definitely a distinct remedy with some important differences. Plants are straggly and thin, rather than fat and obese. They appear less chalky. The paleness is dirty-brownish. *Calc-p.* is more brittle than *Calc.* The epidermis is soft and thin and it cracks. The leaves are thin and brittle. The flowers are strongly affected: long stamens with abundant pollen, yet small. Fruits prone to rot, with soft skins. *Calc-p.* plants are sensitive to cold and damp weather. Leaves that show spots and eruptions, as is evident from the clinical section.

B. Clinical

Debility. Straggly, thin plants. Small fruits with soft skin, prone to rot. Stem rot, stem nematode, spot blotch, seed gall nematode (Fig. 3), eye spot, tan spot, downy mildew. Mainly found in cereals.

Fig. 3 Wheat seed-gall nematode, *Anguina tritici*

C. Appearance

Net blotch (*Pyrenophora teres*)

Develops first as small circular to elliptical dark brown spots which elongate and produce fine dark brown streaks along and across leaves, creating a distinct net-like pattern. When severe, it also affects the heads. The affected area turns yellow. Withering. Residue can produce spores over two years. Infection requires moist conditions, 15-25°C (60-75°F). Very humid conditions infect the seed.

Seed gall nematode (*Anguina* spp.)

Wrinkled or twisted or rolled leaves, stems swell at ground level. At heading, plants appear stunted and slow to mature. Instead of grain, there are hard brown/black seed galls. Affected heads are small. Rye, wheat and triticale. The nematode can survive in soil for two years. They are released from the gall in moist conditions, migrating in water films on leaves and sheaths, reaching immature heads. They enter immature florets, mate, reproduce and form galls.

Eye spot (*Cercosporella herpotrichoides*)

Lodging. Plants fall in all directions, breaking within two inches of the surface. Sooty mould on the break and under the sheaths. Brown or honey-coloured lesions. Spores survive on residue, are spread by rain splash, and prefer moist conditions and 10°C (50°F). Soil nitrogen levels are high.

Tan spot (*Cercosporella* spp.)

Tan spots, yellow margins, leaves dry out and wither. It survives on stubble with small black fruiting bodies that release spores in wet conditions. The longer the wet period, the more severe the infection. Durum wheat, triticale and grasses. Not often seen in rye, barley or oats.

Downy mildew (*Peronospora* spp.)
Young plants show leaf yellowing and severe stunting and excessive tillering. Many plants die at this stage. Older plants have thickened, leathery leaves and twisted, fleshy and distorted heads (crazy top). Affected tillers produce no grain. Worse in moist conditions. It affects wheat, barley, oats, rye, durum and triticale, maize, sorghum and many grasses.

Caution

As with all *Calc*. preparations, the important thing here is to exercise caution. Deep-acting remedies that form part of the body of plants must never be over used. If given too often, the negative effects will compound the existing problem.

D. Flowers and fruits

Flowers are severely affected, little or no grains. Flowers with long stamens and abundant pollen, fruit grains have soft skins and are prone to rot.

E. Water needs

Usually only occurs if water is too abundant.
The combined effect of calcium and phosphorus can be seen operating in this remedy; the epidermis is weak, making for many lesions in the form of spots and rots. The reproductive organs are severely affected so that crop losses occur. A single application during the lifetime of cereals is sufficient to arrest most problems.

F. Relationship

Antidote to: *Ferr.*, *Mag.*, *Mang.*, *Zinc*.
Inimical: *Mag*.
Antidoted by: *Sulph*.
Complementary: *Phos.*, *Sulph*.

Cuprum metallicum

Copper. Cu. Trituration. Elemental copper used for this preparation.

A. General

Metallic copper works from within outwards. It ranks with the most important of those remedies which relieve states arising from the “striking inwards” of diseases. It is this power to relieve internal spasms which renders it appropriate in the state of collapse. *Cuprum* produces epidermic symptoms. Agricultural publications make it clear that copper deficiency or excess hinders the uptake of other nutrients, as long as the imbalance occurs in the plant.

The plant seems to require more water and nutrients, there is chlorosis after excess iron, roots appear speckled white. Sometimes plants smell rotten, although no rotting tissue can be found, and no unusual symptoms are in evidence. Withertip can be seen as the state of cramp or spasm found in humans or animals. Affected shoots bend easily, wither and die. New shoots emerge lower in the tree or plant, producing branches that look like mistletoe on the shoot tips. Because shoots do not mature, fruit setting and flowering are either totally absent, or impaired. Fruit-drop in apples points to fertiliser toxicity and copper deficiency, as well as hot dry summers, persistent wet, early winters, and competition between fruits.

B. Copper deficiency

This expresses itself as sterility of the pollen. It also increases the susceptibility to powdery mildew. Disease resistance depends on the age of the plant and the degree of the deficiency.

Copper deficiency affects carbohydrate metabolism, nitrogen metabolism, cell wall permeability and seed production. Young fruit trees are affected mainly on sandy soils. Speckling of the leaves. Withertip in grains; witch's broom appearance. Termination of all growth. Copper is antidoted by potassium.

Impaired photosynthesis, respiration and evaporation are some of the other problems associated with copper imbalance. Liming can be an aid in copper deficiency (see *Cupr-s.*). Copper is an activator of some enzymes and may play a role in abscission, as some plant hormones and enzymes are triggered by copper.

In soil copper becomes "locked up" and unavailable to plants when nitrogen or ammonium are excessive.

The relationships between copper and sulphur are also expressed through the sulphur-based herbicides. It is generally accepted practice to use these in the beginning of the lifecycle of a grain. Studies conducted in Western Australia, (Robson and Snowball, 1990; McLay and Robson, 1992) and South Australia (Pederson, R. N. et al., 1991) showed that sulfonylurea herbicides can reduce the uptake of copper and zinc in barley and wheat.

C. Clinical

Copper deficiencies and excesses, fruit drop, flower drop excessive. Only 1-2% of flowers have set fruit. Premature fruit drop. Anomalies of flowering and fruiting. Early abscission of leaves.

D. Relationship

Antidoted by: *Ammoniums*, *Calc*., *Ferr*., *Nit-ac*., *Phos*., *Kali-i*. and other *Kali* remedies, *Sulph*.
Inimical: *Moly*., *Sulph*. (except in *Cupr-s*.), *Zinc*.
Antidote to: *Ferr*., *Phos*.
Complementary: *Sulph*. (except in *Cupr-s*.)

Cuprum sulphuricum

Sulphate of copper. $CuSO_4 5H_2O$. Trituration.

A. General

In his “Treatise on Dynamised Micro-Immunotherapy ”, O. A. Julian describes an experiment on plants performed by Prof. Netien of Lyon and his assistant Mme Graviou in 1965. They proved the activity of infinitesimal doses of *Cupr-s*. on plants intoxicated with the crude substance.
The dwarf beans were germinated in some buckets filled with earth. Three times per week, a solution of copper sulphate (20 mg/litre) was watered in for a period of two months. The plants developed, flowered and bore fruit. Some of the treated beans were collected for experiment with homeopathic dilutions. As a control, some of the seeds were not treated with homeopathic dilutions. Germination occurred normally for both treated and untreated plants: those not treated were watered with distilled water, while the treated plants received distilled water with either 5C, 7C, 9C, or 15C of *Cupr-s*.
After three days of observation, no difference was noted over all groups in regard to growth and development. The young plants were then placed in twice distilled water in culture phials, each plant in its own group. At the end of three more days, all groups except the control group were returned in their corresponding homeopathic solution.
On the eleventh day, photographic evidence was collected to verify that, compared to the control, a very marked increase in development of the plants treated with homeopathic dilutions of *Cupr-s*. had taken place. The increase was especially marked on the roots, while the difference between the potencies was much less than that between the treated and the control groups.
Further evidence was collected on days 15 and 18. It had been shown that the homeopathic dilutions of *Cupr-s*. have a positive action on the growth of bean seeds collected from plants intoxicated by crude copper sulphate.
The same experiment on seeds from “normal” plants gave much less

convincing evidence. It can therefore be concluded that the diseased plants, with disturbed metabolism due to poisoning with copper sulphate, demonstrate the efficacy of homeopathic treatment.
This research has been thoroughly confirmed by Netien, Graviou and Boiron who have repeated the experiment using only the 15C potency of *Cupr-s.*, publishing the results in 1972.
Sulphur deficiency increases susceptibility to take-all (*Ophiobolus graminis*), when it is caused by an excess of potassium.

B. Clinical

Copper and sulphur toxicity.

C. Relationship

Antidote to: *Ferr.*, *Phos*.
Inimical: *Kalium.*, *Moly.*, *Zinc*.

Ferrum metallicum

Iron. Fe. Trituration. Elemental iron used for this preparation.

A. General

Iron (*Ferrum*) is needed for the process of photosynthesis. If there is an iron deficiency, plants become chlorotic, with a lack of chlorophyll.
As Calcium represents Water, so Iron represents Fire, Phosphorus is Air, and Silica and Potassium are Earth.

B. Clinical

Chlorosis. Pale, sickly plants that nearly fall over. Imperfect assimilation, impaired photosynthesis, protein content low. Fruit and vegetables have no taste. Bacterial blights (Fig. 4), waterlogging, head tipping, blasting, orange bug.

Fig. 4 Bacterial blight on soybean

Chlorosis in plants, sterility, no fruit, no flowers, sickly stunted growth, pale, no strength to stand up, as in *Calc*., *Calc-f*. and *Calc-p*. with which it should be compared. Imperfect assimilation due to capillary problems, capillary collapse. Impaired photosynthesis due to absence of chlorophyll, consequently low protein content as photosynthesis produces the glucose needed in the manufacture of proteins. This in turn leads to further weakening of the plants with inevitable collapse.

Iron is known as a nutritive remedy in some plant disorders, having an organopathic relationship to the capillary system. Digestive disorders with inability to assimilate calcium. It is not suited to all cases of chlorosis, or even the majority of them. It should, however, be given with discrimination and careful observation. Excess iron will cause anaemia and chlorosis and *Ferrum* preparations will severely aggravate in repeated doses.

It is suited to the type of chlorosis often seen in young plants with little capillary action. The appearance may be deceptive as the plant is healthy, yet with many pale leaves, as well as a droopy appearance. There is paralysis of the capillaries, which sets up a chlorotic weakness. Irritability of the tissues; they bruise easily. Plants are worse after watering and cold spells. In such cases, the sulphide and phosphate are better than the pure metal, unless it is clearly indicated.

Note

Ferrum must be used with care. In general, *Ferr-p*. or *Ferr-s*. are better suited. *Ferr*. has some symptoms in common with *Calc*., *Sil*., *Phos*., *Kaliums* and *Ammoniums*, *Mang*., *Mag*. and *Nit-ac*., because they form part of the properties of all living creatures and as such all of these remedies need careful study in their relationship to plants.

Ferrum preparations perform a similar function to the *Calc*. group, but are very different and so cover a different range of diseases, as well as curing some of the same diseases.

Its relationship to *Mag*. is in a supportive role in photosynthesis. With *Phos*. its relationship is more in the same vein: oxidation.

C. Appearance

Pale, sickly looking plants; no strength to stand upright. Chlorosis, low protein content, juvenile plants refuse to grow. Paleness of a dirty white or yellowish appearance.

D. Chemical

Impaired photosynthesis, low protein content, systemic collapse of capillaries, paralysis of the capillary system. Impaired nutrition, little or no photosynthesis, low phosphorus and calcium content. Low sugar and starch.

E. Flowers and fruits

Flowers have increased pollination, yet are sterile. No fruits, or incomplete fruit setting. Immature fruit drops too early.

F. Water needs

Either want of water or worse for watering.

G. Relationship

Antidote to: *Calc*., *Phos*.
Inimical: *Kali*., *Phos*., but not in *Ferr-p*.
Antidoted by: *Cupr*., *Mang*., *Zinc*.
Complementary: *Mag*.
Compare: *Ammoniums*, *Calc*., *Kaliums*, *Mag*., *Mang*., *Nit-ac*., *Phos*.

Ferrum phosphoricum

Iron (III) phosphate. Ferric (ortho)phosphate. White phosphate of iron. $FePO_4$. Trituration.

A. General

This is the form used as a tissue salt by Schuessler, and also in organic agriculture, rather than Iron (II) hydrogen phosphate, $FeHPO_4$. Schuessler put *Ferr-p*. in the place of *Aconitum*, *Belladonna*, *Gelsemium*, *Arnica* and others which correspond to circulation disorders.
Relaxation of tissue. It retains the features of other *Ferr*. preparations and caution is warranted.
Iron and its salts possess the property of attracting oxygen. The iron in the sap takes up produced oxygen which it transports at night to be exhaled by the plant. During the day a plant takes up carbon dioxide from the air. The sulphur contained in the sap and capillaries assists in transferring oxygen from all the cells containing iron and sulphate of potassium. When the molecules of iron contained in the cells of the cambium have suffered a disturbance through some injury or wound, the affected cells grow flaccid. If this affection takes place in the annular fibres of the capillaries, they are dilated and sap is increased. This state is reached during the first stage of inflammation. When cells are brought back to normal with *Ferr-p*., the cells

can cast off disease. When the flaccid cells in the cambium receive *Ferr-p.*, the normal tension in the capillaries is restored. The swollen vessels are reduced to their normal size and thus the spots and blotches disappear, leaving only a little scar tissue as shown from clinical tests.

B. Clinical

For removal of excessive flow of sap; vies with *Arnica* and *Calendula* as a first aid remedy. Indicated in the first stages of rust. Yellow leaf spot, spot diseases, smut diseases (Fig. 5), aphids, black leg.

Fig. 5 False smut, *Ustilaginoidea virens*, sign

C. Appearance

Reddish inflamed roots, dry under epidermis. Very thirsty plants that do not assimilate nutrients. Capillary congestion. Pale, straggly- looking plants with many eruptions. Tan spot, blotches, bacterial blights, aphids, take-all.

Halo spot (*Pseudomonas* spp.) (see Chapter 11).

Stripe blight (*Xanthomonas translucens*) (see Chapter 11).

D. Water needs

It is advisable not to water much in dry weather to stop spread. The plant is very thirsty and wilts. Use trickle system.

E. Flowers and fruits

Either abundant pollen or complete absence. Premature flowering, difficult flowering, difficult setting of the fruit.

F. Relationship

It is not only *Ferrum* preparations that are indicated in such diseases. The *Ferr-p*. debilitation and suppurative processes paint a perfect picture of the capabilities of *Phos*. to upset the epidermis with blackish ulcers. *Nit-ac*. and *Kali-c*., *Nat-s*., and *Nat-c*. may be indicated for similar symptoms. Although normally *Phos*. is the antidote of *Ferr*., here it is seen as a complement, because the normally antagonistic actions are here combined. This creates a

substance which not only acts on the capillaries - hence the rots - but is also a stimulant for flowering and fruit setting.

Ferrum sulphuricum

Sulphate of iron. Iron (II) sulphate. Ferrous sulphate. $FeSO_4$. Trituration of freshly prepared crystals or solution.

A. General

When a sulphate and any oxide of iron come into contact with decomposing organic matter, they surrender their oxygen and form a sulphate of iron. After more oxidation this further decomposes into sulphuric acid and a single oxide of iron. The acid is destructive to an extreme degree in plants and other living entities. Therefore it is not recommended even in potency in plants, since it will destroy life. In this capacity it may serve as a weed killer, but we recommend other remedies for this purpose. We are of the conviction that it is better to use pests to get rid of weeds, since they serve a useful purpose in that capacity.

Ferrum is important in plants for the transport of oxygen. Sulphur serves another purpose that is dependent on the presence of iron, copper or other minerals, since sulphur cannot act by itself in plants. Plants cannot take up sulphur without the help of other elements and thus sulphur can only be absorbed in compounds.

Sulphur is inimical to *Mang*. and the *Natrium* salts and is thus contraindicated in salty regions. Even *Nat-s*. cannot be used, because it will disrupt the processes in plants, hindering the uptake of manganese. Naturally, it is imperative that *Sulphur* compounds be monitored throughout the period of use, to avoid negative effects. Since it is a micronutrient, any excess will immediately set up reactions.

Ferr-s. corresponds, like *Calc*. and *Calc-f*., to the condition of cancer in trees. Nutrients are not taken up. It may be suited to removing mercury from plants, or modifying mercury uptake in plants. All symptoms are worse in summer, on warm days, at night and in the morning. Afternoons generally give the best appearance. The roots may appear discoloured, red, or have bright red papular eruptions. Swelling of parts of the roots. There is a dry feeling under the epidermis of the root (in healthy plants, this is moist). Nutrient uptake is impaired or absent. Moulds of all kinds: powdery mildews, downy mildew, grey mould of all species, sooty mould of all species, some black moulds.

The exception here is slimy moulds which, on account of similarity in appearance, have been grouped with snails and slugs and covered by *Helix*. To treat sodium arsenite toxicity, ferric sulphate can be used in crude form, 10 pounds per 100 square feet. Note that the ferric type should be used, not the ferrous type used to prepare the homeopathic remedy. This should be followed by gypsum application, to neutralise any remaining sodium traces.

B. Clinical

Impaired photosynthesis, deformed flowers, straggly, twisted, deformed appearance. Tree cancer. Moulds and mildews, black point (*Bipolaris* spp.), septoria blotch (*Septoria* spp.). (Fig. 6, 7).

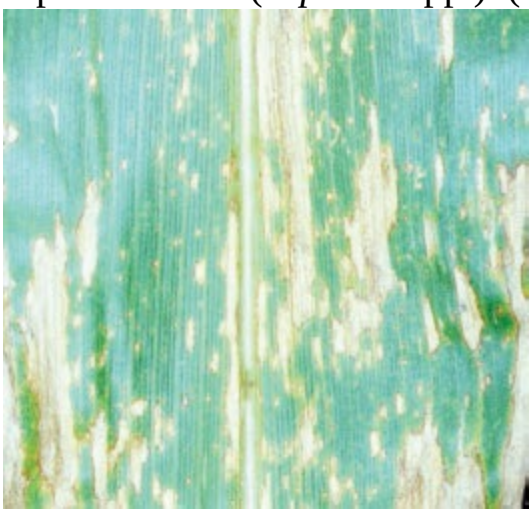

Fig. 6 Southern corn leaf blight and stalk rot, *Bipolaris maydis*, symptoms

C. Appearance

Grey mould (*Botrytis* spp.) (see Chapter 11)

This fungus produces sclerotia (resistant and masses) and can be present throughout the whole year in plant debris. Grey furry surface indicates spore formation. Cool, humid conditions are required. The spores are spread by wind. All above ground parts are affected, although there is an affinity for fruit. Pears develop a soft brown rot and the spores are typically grey and powdery, assuming conditions are favourable.

Sooty mould-black point (*Bipolaris*, *Alternaria* and *Fusarium* spp.) (Fig. 8) (see also Chapter 11)

Fig. 8 Black spot, *Alternaria* spp.

Also called black spot, this disease can be caused by several types of fungi that live on decaying grasses; it is very common. The embryo end of the growth darkens. It is better, when using infected seed, to spray shortly after seeding with *Ferr-p*. to reduce infection and thus have clean seed for the next crop. In this way, resistance is built up and carried into the next generation, thus making susceptibility obsolete. What takes enormous amounts of time and money through genetic engineering can be achieved cheaply and quickly through homeopathic treatment.

Septoria blotch (*Mycosphaerella* spp.) (see also Chapter 11)

Blotches on leaves, irregular in shape, tan to brown, occasionally silvery with yellow rims. Along leaf veins, blotches have straight margins. After three weeks to a month, small black fruiting bodies form on the leaves. This is the time to spray *Ferr-s*. In moist conditions spores are produced and are carried from leaf to leaf by rain splash. In heavy rainfall, crop loss of up to 30% has been recorded.

Septoria nodorum blotch (*Leptosphaeria nodorum*) (see also Chapter 11)

Blotches on leaves that are yellow or tan to brown, oval shaped, turning to grey as they enlarge. Leaves die with yellow tops. Chlorotic appearance. Fruiting bodies are grey-brown with specks within blotches.

Fig. 7 Septoria leaf spot and canker, *Septoria musiva*, symptoms

D. Relationship

Compare: *Sulph*.
Antidote to: *Calc*., *Cupr*., *Phos*.
Inimical: *Kali*., *Moly*., *Phos*.
Antidoted by: *Cupr*., *Mang*., *Zinc*.

Kalium carbonicum

Potassium carbonate. K_2CO_3. Solution. Trituration and solution.

A. General

The potassium salts form a large part of a plant's diet, and are therefore remedies of prime importance where nutrition is impaired or imbalanced. Although differences will be found in its respective constituents, as is the case with the *Calc*. and *Ferr*. preparations, the *Kalium* symptoms run throughout the pathogenesis (see also *Cham*.).
As with all tissue salts, caution is recommended, as indiscriminate use leads to disaster; witness the excess application of NPK, which has produced much disease in plants and consequently animals and humans. In potassium excess and deficiencies alike, *Kali-c*. works well, but how it is used will depend on the plant species concerned.
Potassium was seen in Europe (Denmark) to increase ear number, but reduce grain weight in higher than normal applications. Drought combined with excess potassium during ripening reduces yield. Both grain weight and number per ear were negatively affected. It stimulates leaf growth, thus increasing dry matter.

B. Potassium deficiency

Cotton varieties which fruit faster and have higher yields develop potassium deficiencies even with extra applications (Fig. 9). The cotton bolls will then withdraw potassium from the leaves, leading to their breakdown, as well as a reduction in the quality and quantity of cotton per plant. (Hake, 1991)

Fig. 9 Potassium deficiency, damage

Potassium carbonate, sometimes called “vegetable alkali”, exists in all plants, and was originally obtained from the ashes after burning wood. The potassium salts have a more specific relationship to the solid tissues than to the fluids in the plant. Both excess and deficiency can cause the following symptoms which correlate with the findings of Mason et al. (1975).

The fibrous tissue is especially affected. It corresponds to conditions in which these tissues are relaxed. It affects flowering and fruit setting, the capillary system, leaves, stems, twigs, branches and roots. It is indicated in situations where plants seem to “give out”. Chlorosis is an important feature. The plant is worse in windy or cold weather. Problems alternate, weak plants with epidermis watery and very pale. Plants feel better during the day, and may wilt at night. Vesicles on the roots. Acidic soils exacerbate the problem. There is a sudden collapse of the top layer of cells on the older leaves. There are waterlogged blotches, turning into dead patches. Chlorosis, extending from the margin inwards. The leaves and later the flowers wither and die. Total capillary collapse. Also puckering of the older leaves: wilting leaves have a dull sheen. (Mason et al. (1975)

C. The role of potassium in magnesium deficiency syndrome in cattle

This is caused by anomalies in the ratio of potassium to calcium + magnesium. This discrepancy serves as a guide to potentially lethal pastures.

It was found that when this ratio exceeds 2:2 in grasses, cattle death ensues. Different plant species as well as different soils give different critical ratios K/(Ca + Mg) values.

D. Clinical

Kali-c. is indicated in any plants that either lack or have too much potassium and calcium. In calcium-rich soils, where potassium gets "locked up", in soils with poor calcium content, nutrients do not assimilate.

Kali-c. is associated with many diseases, deficiencies and when soil is poor. Again, caution is important when using any *Kali* preparation.

Fibrous tissue is weak; flowering and fruit setting impaired. Capillary engorgement, chlorosis, worse in acidic soils.

E. Flowers and fruits

Flowers are either abundant in pollen, or have none at all. Fruits drop prematurely, fail to set or ripen. Leaves have a dry epidermis, feel brittle, and have yellow or red spots, which are corrosive and destroy surrounding tissue.

F. Relationship

Antidote to: *Bor-met*., *Bor*.

Antidoted by: *Calc*. and other *Calcareas*, *Natriums*.

Inimical: *Bor-met*., *Bor*., *Calc*., *Calc-p*., *Calc-sil*., *Calc-s*., *Ferr*., *Mang*., *Natriums*.

Kalium muriaticum

Chloride of potassium. KCl. Trituration. Solution.

A. General

Schuessler says of the salt:

> *It is contained in nearly all the cells and is chemically related to fibrin. It will dissolve white or greyish white secretions of the mucous membrane and plastic exudations. When the cells of the epidermis lose molecules of Kali mur., in consequence of a morbid irritation, then the fibrin comes to the surface as a white or whitish-grey mass; when dried this forms a mealy covering. If the irritation has seized upon the tissues under the epidermis, then fibrin and serum are exuded causing the affected spot on the epidermis to rise in blisters. Similar processes will take place in and below the epithelial cells.*
>
> (Schuessler cited in Clarke)

Clarke comments that *Kali-m*. manifests the action of its two constituents in roughly equal proportions. The keynote is whiteness of secretions, exudations

and eruptions of the tissues. The next important keynote is toughness; in plants, mildews are tough and thready.

As *Kali-m*. contains one of the main constituents of NPK, providing the potassium to the soil, it is evident that this remedy is of prime importance in the removal of problems originating from excess potassium. Excess of this element can block a plant's uptake of magnesium, because the potassium binds to it and it becomes unavailable.

Salinisation of soil (with excess salts) mainly involves sodium chloride (common salt), but potassium, calcium and magnesium ions are also involved. This is a complex environmental problem, caused by poor agricultural practices, land clearing and the rise of the water table, which can result in the creation of salt lakes and salt pans.

Sodium and chloride bind easily, and potassium too forms many compounds; *Kalium* remedies are the most numerous mineral group in our materia medica, *Kali-mur*. also being a chloride. This again reflects the complexity of salination problems.

All three major macronutrients (NPK) are related to levels of pest attacks, especially phosphorus, but also potassium. This led us to carry out a study of plants fed NPK, comparing those given or not given *Kali-m*. Subsequently attacks. This led us to carry out a study comparing manganese and potassium; levels were tested and susceptibility to pests and diseases was investigated. On aphids it had little or no effect, but a slightly positive result was seen with barley yellow dwarf virus (BYDV). (Fig. 10)

Fig. 10 Barley yellow dwarf virus on common wheat

The *Kalium* salts are the most extensively dealt with in homeopathy. This great variety shows us that potassium may lock up many more salts not known to affect plants, and the relationships potassium forms with other elements may lead us to new discoveries in plant chemistry and biology. Although we may not yet understand these relationships fully, it will certainly help if more research is directed at their unravelling.

It is true that minerals in plants function differently to minerals in the human body. We do not yet know the full details of how these different roles relate to homeopathic remedy relationships for plants. Our existing knowledge need not necessarily be completely discarded, since the clinical experience of many generations of homeopaths suggests that an antidote is always an antidote. However, it is also possible that a remedy which normally acts in an antidotal or inimical way could become a complementary remedy in plants. As always in homeopathy, the key principle here is individualisation. Each particular situation should be assessed in these terms and, as with any other living entity, it is the patient and not the disease which needs to be treated.

B. Kalium deficiency

This includes sudden or delayed collapse of the top layer of cells in older leaves, with waterlogged areas which later become dead patches. These leaves then become pale and turn yellow at the leaf margins, with discolouration extending towards the centre. The areas around the midrib and veins remain green the longest. The older leaves begin to die, followed by the younger ones. Flower heads wither and die, until the whole plant is affected and dies. Some plants are more susceptible than others, and even different species within the same family.

C. Clinical

Grey moulds, powdery mildew, downy mildew.

D. Appearance

Greyish white moulds

These appear on roots, stems or leaves. Plants are affected by mildew; roots may be affected too. Swollen capillary system. Dry flour-like moulds and mildews. Burns of all degrees.

Moulds and mildews

These represent the most salient types of plant disease related to the remedy *Kali-m*., and are influenced by potassium's interactions with other elements. Potassium is antagonistic to boron, thus reducing boron uptake and causing crown rot in turnips, and sickle leaf and hollow stem in cauliflower. Potassium and magnesium are mutually antagonistic; too much of either reduces the uptake of the other. Although corresponding relationships are not recorded within our existing materia medica, it might prove very helpful to follow up on soil analysis with the addition of an element that, homeopathically, will trigger the uptake. It is useless to apply high NPK and then follow with boron or magnesium; it will only add to the soil's woes, but in conventional agriculture, this type of practice is the only solution open to the farmer.

A homeopathic remedy will act on both plants and soil microbiology, because a microbe induced into inactivity by NPK will be activated by the homeopathic dynamis. In plants it will be visible in the restoration of health which is only possible if the deficient element has been taken up. Therefore the restoration of health in the plant automatically includes the diseases of soil microbial life as they are mutually dependent.

E. Flowers and fruits

Flowers mouldy, fruits with mildews. (Fig. 11)

Fig. 11 Grey mould, *Botrytis cinerea*

F. Water needs

Normal.

G. Relationship

Compare: *Nat-m.*
Antidote to: *Mag.*
Antidoted by: *Ferr., Mang., Nat-m.*
Inimical: *Nat-m.*

Kalium nitricum

Saltpetre. Nitrate of potassium. KNO_3. Trituration or solution.

A. General

Many plant diseases such as eye spot, powdery mildew and others are caused by excess nitrogen. It causes irregularities in flowering and fruit setting, photosynthesis irregularities, and fluid uptake difficulties. The roots may show mouldy patches. Plants are thirsty and wilt easily when fluids are used up during droughts.

This remedy can do much to balance the nutrients, lower the nitrogen content in the plant, aid photosynthesis and enhance the protein content. Excess pollination will be regulated and fruits will set and ripen properly.

Kali-n. can be helpful in sulphur deficiency, when there is excess nitrogen in the plant. This is only possible when at the same time there is also a potassium imbalance.

B. Clinical

Nitrogenous soils, excess or deficiency of nitrogen and related problems. Excess or deficiency of potassium. Yellowing from nitrogen deficiency.

C. Relationship

Compare: *Nit-ac.* and *Amoniums.*

Complementary: *Sulph*.

Kalium permanganicum

Permanganate of potash. Potassium permanganate. $KMnO_4$. Trituration and solution.

A. General

This is another potassium salt which is an oxidising agent, helping in photosynthesis and protein enhancement. The roots appear too dry under the epidermis. The plant is thirsty, as evidenced by a wilting appearance, yet watering does not seem to help. It has a similar action to iron (see *Ferr*. preparations). It has a marked power over oxidation.

The normal relationship of *Mang*. being the antidote to *Kalium* is totally suspended here, of course. Here the two substances complement one another, rather than having antagonistic effects.

In medicine, the strong oxidising properties of this substance are used for antiseptic purposes. It is used to treat fungal skin infections in humans and animals, and can be valuable for mildews and grey speck in plants.

Lack of oxidation brings on pests; they thrive on plants that have the type of wilting seen here, as it pertains to weakness. A plant lacking oxygen is as good as food for pests because it has no resistance. The taking up of oxygen enables the plant to process its food, while a lack brings on “constipation” or “diarrhoea”. This means that its carbohydrates are either unavailable – the plant cannot transport them from the roots to where they are needed – or are processed too fast, due to some enzyme imbalance.

B. Clinical

Excessive wilting, with no improvement from watering. Pale striping from manganese deficiency. Grey speck.

C. Relationship

Compare: *Mang*.

Inimical: *Ferr*., *Nat-m*., but not *Mang*.

Antidoted by: *Nat-m*.

Kalium phosphoricum

Phosphate of potassium. K_2HPO_4. Trituration. Solution.

A. General

By analogy, Schuessler tells us that *Kali-p*. produces irregularities in the capillary system. Nutritional problems; nutrients are not taken up the plant,

which is weak, gangrenous, and straggly. The immunity of the plant is greatly impaired; drought, stress, frost and temperature shock affect the plant profoundly.

B. Clinical

Chlorosis. Photosynthesis impaired. Potato gangrene. Bloated leaves, full of fluid. Purpling of leaves in phosphorus deficiency. Environmental stress. (Fig. 12)

Fig. 12 Phoma blight, *Phoma medicaginis*, symptoms

C. Appearance

Head tipping

Sterility from blasting and waterlogging are some of the environmental stress symptoms associated with *Kali-p*. imbalance. The generative sphere is strongly affected, flowers pollinate excessively or not at all whilst fruit setting is slow or only partial.

Purpling in barley

This is due to phosphorus imbalance, which is also the cause of susceptibility to environmental stress and flowering and fruiting irregularities. The capillary problems were positively affected in field tests.

D. Relationship

Compare: *Am-p.*, *Calc-p.*, *Cham.*, *Ferr-p.*, *Mag-p.*, *Phos.*
Antidoted by: *Ferr.*, *Mang.*, *Nat-m.*
Inimical: *Ferr.*, *Mang.*, *Natriums.*

Kalium sulphuricum

Potassium sulphate. K_2SO_4 . Trituration.

A. General

Kali-s. acts reciprocally with iron in the transfer of exhaled oxygen, and is found in all cells containing iron. A deficiency of *Kali-s.* results in

desquamation of the cells of the epidermis and epithelium which have been loosened because of excess oxygen remaining during the day. Useful after rust disease. When a sulphate and any oxide of iron come into contact with decomposing organic matter, they surrender their oxygen and form a sulphate of iron. After more oxidation this further decomposes into sulphuric acid and a single oxide of iron. The plants suffer most on hot days and during summer. From the pathogenesis, this remedy may be effective in the first stages of ergot disease, when the sticky, shiny droplets are produced during flowering.

B. Clinical

Impaired photosynthesis. Rust and its results. Chlorosis. Useful in the beginning stages of ergot (Fig.13). Banana rust thrips.

Fig. 13 Ergot

C. Appearance

Rust or chlorosis, first stages of ergot disease.

D. Water needs

Normal.

E. Flowers and fruits

In ergot, when the sugary, shiny droplets are formed during flowering.

F. Relationship

Compare: *Ferrums*.
Complementary: *Ferrums*.
Antidoted by: *Natriums*.
Inimical: *Ferr*., *Mang*., *Natriums*.

Magnesium carbonicum

Carbonate of magnesium. $MgCO_3$. Trituration.

A. General

Mag-c., like *Kali-p*., is sensitive to environmental stress such as temperature shock, to an even greater degree. Puny, sickly looking plants which do not thrive on acidic soils or have been given unsuitable nutrients. Nitrogen given in seedling stage leads to collapse. There are vesicles on the roots, which are too dry under the epidermis. The plants are very thirsty and wilt more in the evening when the sun sets. The flowers have incomplete or no stamens, causing impaired or absent fruiting. Photosynthesis is impaired, protein content is low. The capillary system is engorged, its action impaired.
Mag-c. is inimical to *Nat-m*. and *Kaliums* and an excess of either causes magnesium deficiency or, conversely, causes a reduction in the uptake of sodium in the coastal areas where salt water bores cause problems with salination.

B. Magnesium deficiency

The symptoms of magnesium deficiency appear rapidly. (*Acon*. and *Bell*.) Yellowing of the leaves, marbling between the veins. These spots become necrotic. The appearance is similar to yellow dwarf virus symptoms. The oldest leaves are most affected, later also the younger leaves. The veins and the midrib remain green. The leaves fold backward as they die. At the back of the leaves the interveinal areas are pink.
Magnesium is needed in rather large quantities, like NPK. In this sense it is closer to being a macronutrient than a trace element. Deficiency shows as yellowing of the leaf tips and margins, leaving a dark-green tongue at the leaf base. Chlorosis increases and leaf scorch sets in on the margin. Older leaves are most affected. This problem is prominent in apples: Lady Williams, Yates, Red and Golden Delicious, Jonathan and Abas.

C. Clinical

Wilting, temperature shock, frost shock (Fig. 14, 15). Chlorosis, dirty yellow. Windburn, damping off.

Fig. 14 Snow, ice, frost, cold, winter injury, damage

Fig. 15 Snow, ice, frost, cold, winter injury, damage

D. Liming

This may also cause *Mag*. deficiencies, especially when it is excessive. Delbet considers *Mag*. to be important in germination. *Mag*. is abundant in the seeds of plants while the corm contains more than the straw.

E. Appearance

Virus infections

These can severely affect plant nutrition levels. Nitrogen, phosphorus, magnesium and zinc concentrations usually increase while potassium levels decrease.

Magnesium can be positioned between the potassium and calcium compounds, and is strongly influenced by these elements. When it forms

compounds with potassium, it adapts its mode of action to this element. When it forms compounds with calcium, it behaves accordingly. Leeser considers *Mag*. to be of physiological significance most strongly in plants. In organic form it is found in the chlorophyll. It plays a role in the assimilation of CO_2 in the oxidation of the carbon compounds. It is inimical to sodium and potassium.

F. Relationship

Compare: *Acon*., *Am-m*., *Bell*., *Ferr-m*., *Kali-m*., *Nat-m*.
Antidoted by: *Mang*.
Inimical: *Calc*., *Kali-c*., *Kali-m*., *Kali-p*., *Kali-s*., *Nat-c*., *Nat-m*., *Phos*.
Complementary: *Calc*., *Kaliums*, *Nit-ac*., *Phos*., *Zinc*.

Magnesium muriaticum

Chloride of magnesium. $MgCl_2$. Trituration and solution.

A. General

Mag-m. has many features in common with *Nat-m*. and sea water. It has a very bitter taste. The roots of the plant appear swollen and are dry under the epidermis. The plant needs frequent watering. Photosynthesis is impaired, and leaves, besides being chlorotic, may show signs of rust.
The flowers may not develop fully or have distorted stamens, whilst fruit setting is greatly impaired.

B. Clinical

Salination problems due to salt water bores. Puny, rickety plants, severe and extensive chlorosis.

C. Relationship

Compare: *Nat-m*., *Kali-m*.
Inimical: *Calc*., *Kali-m*., *Natriums*, *Phos*.
Antidoted by: *Mang*.
Complementary: *Calc*., *Kalium* salts.

Magnesium phosphoricum

Phosphate of magnesium. $Mg_3(PO_4)_2$. Trituration. Solution.

A. General

Mag-p., according to Schuessler and by analogy in plants, is contained in the sap, the structural tissues and chlorophyll. Disturbance in the molecular structure results in paralysis of the capillaries. Because excess potassium will lock it into the soil, a lack of *Mag-p*. will result in disturbances of

metabolism, evaporation, and photosynthesis. It has a strong family resemblance to *Mag-c*. and *Mag-m*. The plants suffer most in cold, rainy weather, from waterlogging. Cankers of the roots, with cracked epidermis. The plant seems to wilt, or cannot hold itself upright. Vitality is greatly impaired.

From research it has become evident that phosphorus cannot be taken up without magnesium, nor can it be properly distributed. Without it, no living entity can live properly: they appear “clapped out”. In field tests, magnesium deficiencies were shown to be due to excess phosphorus.

B. Deficiency

The relationship between magnesium and phosphorus is a subject that has been overlooked by many soil and plant scientists. It is surmised that because magnesium is present in chlorophyll there cannot be a problem. It forms the second most abundant element in animals, and is maybe the fifth major nutrient in plants. Andre Voisin and Dr. William Albrecht (quoted by Hylton, 1974) have repeatedly warned that magnesium deficiencies would cause severe health problems in humans, animals and plants. For more than 25 years, their warnings have been ignored. In the late 70s the USDA acknowledged the importance of magnesium in agriculture. (Fig.16)

Fig. 16 Magnesium deficiency, damage

Without magnesium, phosphorus cannot be properly distributed in the cell nuclei, nor transported to other parts of the plant. A phosphorus deficiency cannot be rectified by any amount of phosphorus applied without magnesium. Thus, if the phosphorus content is to be increased, so must the magnesium. At the same time, excess phosphorus will render copper, potassium and zinc deficient.

C. Clinical
Chlorosis, yellowing, bronzing and shedding of the leaves.
D. Appearance
Leaves yellow, bronze and redden and consequently are shed. This creates a fertile environment for mites, providing conditions in which they thrive.
All symptoms are worse in cold winds and draughts of cold air, and rain. The plants thrive in heat, warm winds, and dry weather.
The roots may show bacterial canker, with cracked epidermis. The cankers look red and raw. They do not readily take up water, although the plant is very thirsty. The capillaries may be paralysed; nutrients, sugars, starches and proteins are not transported to their correct places.
Following the yellow, bronze or red discolouration, the leaves drop easily and the plant withers and dies. Photosynthesis is impaired due to lack of *Mag-p*. All metabolic functions are impaired due to the inability to distribute phosphorus where it is needed.
E. Relationship
Compare: *Cupr*., *Kaliums, Phos*., *Zinc*.
Complementary: *Phos*., *Ph-ac*., *Calc*., *Kaliums*.
Antidote to: *Phos*.
Inimical: *Phos*., *Cupr*., *Kaliums*, *Zinc*., *Calc*., *Nat-m*.
Antidoted by: *Mang*.

Magnesium sulphuricum
Sulphate of magnesia. Epsom salts. $MgSO_4$. Trituration.
A. General
Mag-s. has more prostration than any other *Mag*. preparation. Lodging of grains is commonly met by *Mag-s*. Contrary to *Mag-p*., the plant is excessively thirsty and the evaporation rate is very high. As described in the other *Mag*. preparations, its relationship to phosphorus is very important. The sulphur content is responsible for the chlorosis and lodging, as lack of sulphur causes these symptoms. Thus both the sulphur and magnesium components are significant here.
The roots are very dry with a rough epidermis. The high water need, with immediate evaporation, corresponds to diabetes in humans and the lack of sugars in the plant is a leading indication. Respiration is impaired, as well as photosynthesis. Consequently, all sugars stored in the roots will be used up,

causing weakness and lodging, which shows in the yellowing of the young leaves. The plant is susceptible to net blotch and other blotches, and has a wilted appearance.

B. Clinical

Chlorosis of young leaves followed in later stages by total yellowing. Lodging, wilting, withering. Net blotch. Blotches in general. Mildews. Damping off.

C. Relationship

Compare: *Phos.*, *Sulph*.
Complementary: *Calc*., *Kali*., *Phos*., *Ph-ac*.
Inimical: *Calc*., *Kali*., *Nat-m*., *Phos*.
Antidoted by: *Mang*.

Manganum

Acetate of manganese. *Manganum aceticum*. $Mn(C_2H_3O_2)_2$ solution.

Carbonate of manganese. *Manganum carbonicum*. $MnCO_3$. Trituration.

A. General

Manganese is a cofactor in many plant reactions. It is essential for chloroplast production.

Manganese was isolated in the year in which Priestly discovered oxygen. Hahnemann introduced it into the materia medica and made provings with the acetate and carbonate. The symptoms of the two will be discussed together. Manganese has a remarkable affinity for and in some respects resemblance to iron, with which it is frequently found. It has a similar capillary collapse to *Ferr*., and *Calc-f*., with which it should be compared. Manganese is an oxygen carrier in plants. Plants cannot stand upright, wilting often and soon. The roots are congested and look pale. Many blotches and blights on the leaves as well as moulds and mildews. The plant requires little water. The flowers are affected in pollination with little or no pollen and incomplete fruit setting. Photosynthesis is impaired, and there is capillary congestion and collapse, with weak stems that break or bend too easily.

B. Deficiency

Manganese occurs in the alliums, the *Cruciferae/Cucurbitaceae*, as well as the *Solanaceae*. *Nat-c*., which is the form of sodium carbonate used as a water softener (not the cooking ingredient bicarbonate of soda), is worthy of comparison. Highly alkaline soils show more deficiency. Both *Nat-c*., and

Calc. must be studied in this connection. Because of a reduction in chlorophyll, the photosynthetic capacity is impaired. The chlorosis begins pale green and can turn orange-red. Symptoms can appear both on the youngest and the oldest leaves depending on the plant species.
Cabbage: general mottled yellow leaves.
Beetroot: triangular leaves. This is known as speckled yellows.
Onions and sweetcorn have yellow stripes.
On acid soils, liming can cause manganese deficiencies. The sulphate of lime is used in its crude form (Ca SO4). Foliar spray can be used with much lower rates to be effective. Manganese is therefore best administered as a spray. It is best to spray the plants when still young, although equally good results can still be obtained halfway through to maturity.

C. Toxicity

Manganese toxicity can be reduced by an application of *Sil*. The conclusion is that Sil. is the antidote to *Mang*. It is also antidoted by *Kali*. If manganese is deficient, it increases susceptibility to take-all. Potassium excess can be inimical to manganese thus increasing the susceptibility to take-all.
External manifestations of manganese deficiencies show as a gradual paling and faint yellowing between the veins. The yellowing is most prominent on older leaves. The interveinal areas finally become very yellow whilst the veins remain a dark green (when younger leaves are affected, see *Zinc*.). The leaf shape remains normal. The colour is usually pale green (*Zinc*. turns yellow). Shaded leaves more affected. Worse on loamy soils.
It occurs in all fruit-growing districts. *Mang-s*. is usually used in a crude dose (500 g/100 l) to counteract this problem.

D. Clinical

Chlorosis. Pale striping in barley, moulds, mildews, e.g. Monilinia brown rot (Fig. 17), tan spot, blotches and blights, wilting. Soil pH neutral or alkaline.

Fig. 17 Brown rot, *Monilinia fructicola*

E. Relationship

Compare: *Kali-ma*.
Complementary: *Ferr*.
Inimical: *Calc*., *Kali*., *Phos*.
Antidoted by: *Calc*., *Sil*., *Kali*.
Antidote to: *Ferr*., *Mag*.

Molybdenium

Molybdenum the element. Mo. Trituration.

A. General

Soil acidity reduces the availability of molybdenum. Take particular care with acid soils liable to molybdenum deficiency. Ensure that there is an adequate molybdenum supply if you are applying acidifying fertilisers such as ammonium sulphate.

The soils usually contain more than adequate potassium, sulphur, copper and molybdenum for crops and pastures, with inadequate phosphorus and zinc levels being the only problems related to nutrient element deficiency when the soils were newly cleared.

Loam and clay soils, other than those mentioned in some zones, do not generally require copper, zinc or molybdenum, although isolated deficiencies of zinc have been reported. 60 g of molybdenum is contained in 150 g of sodium molybdate, or in 112 g of molybdenum trioxide. Nutrients have different mobility in the soil, and as seasonal moisture conditions vary, so too does the distribution of nutrients derived from applied fertilisers. Soils differ in their nutrient holding capacity, both generally and for specific plant

nutrients.

Natrium carbonicum

Sodium carbonate. Washing soda. Na_2CO_3. Trituration. Solution.

A. General

Nat-c. is the typical salt of the *Natrum* group. An excess of alkali burns off the superficial layers of the epidermis leaving the leaves dry and cracked. The roots are dry, sometimes mottled or ulcerated. The plant is excessively thirsty, whilst photosynthesis is impaired due to excess water stored in the plant.

The flowers come too early, resulting in sterility in cereals, and failure to form fruits in fruit-producing plants. The plant is weak and cannot remain upright as in eye spot. The spots and blotches are blackish while the leaves dry out. Also tan spot and halo spot can be treated with this remedy. As these diseases have been described elsewhere, they are not mentioned again here.

B. Clinical

Sterility. Chronic effects of sunstroke. Windburn. Blotch. Weak straggly plants. Eye spot.

C. Flowers and fruits

Flowers appear prematurely. Sterility in cereals. Failure to form fruits.

D. Water needs

Excessive.

E. Relationship

Compare: *Kalium* preparations.

Inimical: *Kali*.

Antidoted by: *Phos*.

Natrium muriaticum

Sodium chloride. Common salt. NaCl. Trituration and solution.

A. General

If *Nat-c*. is the typical sodium salt, as *Kali-c*. is of the potassium group, *Nat-m*. is the most important one.

> *The problems of Nat. mur. may be regarded in a sense as the pons asinorum of homeopathy. Those who can grasp, in a practical sense, the uses of this remedy will not meet with great difficulties elsewhere. Those who see nothing but common salt may conclude that they do not have the root of the matter in them.*

(Clarke)

It may be inconceivable to some that the attenuations of *Nat-m*. can act independently, whilst at the same time crude salt is applied in quantity, as is the case with many bores in the coastal regions. (Fig. 18)

Fig. 18 Damage caused by saltwater bores (seawater)

As with all tissue salts, excess is antidoted or otherwise modified and negative effects are counteracted in an almost miraculous manner. A large number of plants in the coastal regions are steadily poisoned with quantities of salt water. Without restricting the quotient given, *Nat-m*. 30X will antidote the effects of the substance in crude form. This has been repeatedly tested on turf in the coastal area of WA where saltwater bores are causing salination problems for bowling clubs. Good results have been obtained.

Schuessler adopted *Nat-m*. from homeopathy. Though arrived at by a different route, his indications are mostly identical to Hahnemann's.

> *Water, introduced to the plant through the roots, salty or not, enters through the epithelial cells by means of salt contained in these cells, for salt has the property of attracting water. Water is needed to moisten all tissues and cells. Every cell contains soda. The nascent chlorine which is split off the salt in the intracellular fluid combines with the soda. The sodium chloride arising from this combination attracts water. By this means the cell is enlarged and divides itself. Only in this way is growth through cell division possible. If there is no salt in the cells, then water remains in the intracellular fluid, and hydraemia results. The plant dries out, though it looks watery and bloated.*
>
> (Schuessler)

Common salt does not cure this problem since common cells can only receive salt in attenuated solutions. The salt is then redundant in the intracellular fluid, and produces epidermal problems such as scald, halo blight and stripe blight where the tissue is waterlogged. Disturbances in the distribution of salt in cells produce residues that become transparent like water on the leaves. These are the theories of Schuessler, altered by analogy to apply to plants. This theory is a useful means to string some characteristics of *Nat-m.* together, but it is by no means complete.

Nat-m. also corresponds to affections due to loss of fluids. *Nat-m.* and *Kali* are related and correspond in plant nutrition. *Kali-m.* can greatly reduce the effects of saltwater bores. These two remedies should be carefully compared. The nutrient functions in plants can be affected negatively when an imbalance between the two occurs in a plant. Either remedy can show excess or deficiency.

The type of irrigation and its frequency as well as the water quality have great influence on plant nutrient levels.

The capillary system is disturbed, resulting in chlorosis, which in turn affects photosynthesis and protein levels. Capillaries are congested and constricted. No matter how much NPK is given, the plants emaciate and become weak. Plants are very thirsty, especially after salt water from bores. Also it increases cadmium uptake.

B. Clinical

Halo blight on beans (*Pseudomonas phaseolicola)* (Fig. 19), scald, stripe blight, salination, salt water bores, chlorosis.

Fig. 19 Halo blight on common bean

C. Appearance

Thin, emaciated plants, despite repeated fertilisation. Flowers produce no pollen, or too early production of pollen. Salt damage due to saltwater bores. Salination problems. Black peach aphid (*Brachycaudus persicae*).

D. Flowers and fruits

The flowers produce no pollen and fruit setting is impaired. Pollen may also be too abundant and too early. Waterlogged areas on stems and leaves. Imperfect assimilation of nutrients.

E. Relationship

Compare: *Kali*.
Complementary: *Kali-m*.
Antidoted by: *Kali-m*., *Phos*.
Antidote to: *Nat-m*., most nutrients.
Inimical: *Kali*.

Natrium phosphoricum

Phosphate of soda. Na_2HPO_4.

A. General

Nat-p. is found in the sap, the cells of the cambium, and the intercellular fluids. Through the action of *Nat-p*., carbonic acid is formed. *Nat-p*. is able to bind itself to carbonic acid, receiving two parts of carbonic acid for each part of phosphoric acid. When it has thus bound the carbonic acid, it conveys it to the leaves. The oxygen taken up in photosynthesis liberates the carbonic acid, which is only loosely bound to the phosphoric acid. The carbonic acid is then exhaled and exchanged for oxygen which is absorbed by iron and manganese in the sap. During the day, this process is reversed. It is obvious that *Nat-p*. is the remedy par excellence for problems with photosynthesis. It can be used for rusts, and indeed in all cases where the leaves develop a golden yellow scab. It must be compared with *Aconitum*.
The normal antidote relationship is here totally suspended: *Phos*. has here the action of a complement. In this way, certain features of a remedy may be totally altered. What normally is a particular feature of a remedy can completely disappear. Although sharing some features of *Natrium* and *Phos*., this is a very different remedy to either, with its own particulars.

B. Clinical

Stripe rust (*Puccinia striiformis*), leaf rust (*Puccinia recondita*) (Fig. 20), photosynthesis problems, banana rust thrips.

Fig. 20 Rust, *Puccinia spp*.

C. Relationship

Compare: *Acon*., *Phos*., *Carb-ac*., *Ferr*., *Mang*.
Complementary: *Carb-ac*., *Ph-ac*.
Inimical: *Kali*.

Natrium sulphuricum

Sodium sulphate. Na_2SO_4. Trituration/solution.

A. General

Nat-s. was discovered by Glauber in 1658 and is known as Glauber's salt. Grauvogl describes it as matching a state in which there is extreme sensitiveness to damp, rain and waterlogging, or growth near bodies of standing water, such as dams or lakes.
The action of *Nat-s*. is contrary to that of the chloride. Both attract water, but for different reasons. *Nat-m*. takes up water destined to split up cells, necessary for growth. *Nat-s*. attracts the water formed during the retrogressive metamorphosis of cells and eliminates it from the system. It draws water from the superannuated serum cells, causing their destruction. *Nat-s*. stimulates the epithelial cells in the capillaries, thus eliminating superfluous water from the system. If the molecules of *Nat-s*. are disturbed,

the elimination of superfluous water is disturbed, and hydraemia is the result. *Nat-s.* is indicated in plants that are too rich in water, are always worse in damp conditions and get better when the weather is dry and warm.
The roots are dry whilst the plant is thirsty. They have a dirty grey-green or green-brown appearance from moulds. Through the yellowing of the leaves, there is impaired photosynthesis, with low protein content.
Drying out with waterlogging is a typical *Nat-s.* feature. Many rusts are favoured by this condition (see *Acon.*, *Bell.*). Some blotches require wet conditions for their development.

B. Clinical

Waterlogging, photosynthesis impaired. Destruction of leaf tissue, leaves turn yellow, stunted plants, chlorosis, ergot, rusts, aphids (Fig. 21), banana rust thrips.

Fig. 21 Apple aphid, *Aphis pomi*

C. Flowers and fruits

Flowers are affected, but no reports of crop loss or fruit failure have been recorded. In general, it can be said that with any disease caused by drying out of plants in moist conditions, particularly when the water is excessive, there can be great benefit from *Nat-s.*
As with all tissue salts, these remedies require very careful monitoring, absolutely minimum dose, and caution in prescription.

D. Relationship

Compare: *Acon.*, *Bell.*
Inimical: *Kali.*
Antidoted by: *Phos.*

Nitricum acidum

Nitric acid. Aqua fortis. Strong water. HNO_3. Solution.

A. General

When strong nitric acid comes into contact with the epidermis, it destroys the upper layers and turns them yellow, but as the protein coagulates, it forms a barrier against its own action. It regulates the excess uptake of phosphorus, as well as nitrogen. It is one of the chief antidotes to mercury: in soils where mercury poisoning is detected, plants can be safely grown, provided a dose of *Nit-ac*. is administered soon after planting, to prevent the uptake of mercury in the plant. *Nit-ac*. follows *Kali-c*. in photosynthesis problems, such as deficient chlorophyll. *Nit-ac*. acts on the roots, the flowers, especially the stamen, the bark, which fissures and cracks, and the leaves, creating problems in photosynthesis.

B. Clinical

Nitrogenous rich soils and plants. Phosphorus excess. Blotch, black point, mildew (Fig. 22), eye spot, purpling of stem and leaves.

Fig. 22 Powdery mildew, *Leveillula taurica*, damage

C. Appearance

Purpling of underside of leaves, pink/red. Yellowing of leaves (also in nitrogen deficiency). Tree bark cracks, (except on eucalypts, where bark sheds as a normal feature). Bark fissures.

Chlorosis

At the 2-4 leaf stage, chlorosis may appear. The midriffs turn pink, as well as the petioles. Later the stems turn purple or red. The older leaves turn yellow

to orange-red, with red veins. The leaves die and gradually the whole plant becomes affected. As a consequence there is a reduction in branching.
The roots have dark blotches or are green (except legumes). They usually have an offensive smell. They are swollen and have an ulcerated appearance.
The plant craves lime or alkaline substances.
The stem is either too rigid or too weak, and both are indications of excess nitrogen and phosphorus. The latter affects the flowers and stamens, which either pollinate too early or not at all. Fruiting is thus affected and crop loss may result. (see *Kali-n*.)

D. Relationship

Nitrogen fixation in beans and peas may be affected by a lack of molybdenum.
Complementary: *Moly*.
Follows: *Kali-c*.
Antidote to: *Moly*.

Phosphorus

The element phosphorus. P. Saturated solution in absolute alcohol.
Trituration of red amorphous phosphorus.

A. General

Phosphorus, (light bearer, morning star) was discovered in 1673 by Brandt, an alchemist of Hamburg, and, shortly afterwards, by Kunkil in Saxony.
Teste informs us that immediately afterwards, attempts were made to use it in medicine. Kunkil made it into his “Luminous Pills”.
Phosphorus has been called the “master key to agriculture”, because low crop production is more often due to a deficiency of this element than of any other nutrient. Deficiencies show up differently in different plants; in cereals, the leaves turn purplish, legumes become bluish green and stunted. Most plants, however, turn dark green with red or purple tints.

Waterlogging

This increases phosphorus availability in the soil. Also plant life affects the pH and the availability of nutrients. Plants can change the soil environment and its level of alkalinity or acidity. The occurrence of barley grass is correlated to the concentrations of organic calcium, transfer of nutrients and the presence of ammonium, available phosphorus, exchangeable cations and soluble salts.
High concentrations of phosphorus in the soil are also connected with

perennial ryegrass causing ryegrass toxicity in sheep. When potassium was increased, the ryegrass responded with an equal increase, while a low level of potassium reduced the occurrence of ryegrass in the paddock, and resulted in more growth of paspalum and browntop bent.

Sheep's sorrel, which is supposed to grow on acid soils, actually makes the soil more alkaline. It is an acid soil pioneer plant, which prepares the soil for plants which require a more alkaline soil.

Phosphorus sources

Phosphorus sources in agriculture consist of the following:

- Monocalcium phosphate
- Calcium phosphate
- Sodium phosphate

Phosphorus is also found in organophosphates which are used as pesticides. From the use of pesticides, it has been evident that the re-emergence of pests can be triggered by them, particularly aphids, as they like high phosphorus environments. Similarly, herbicides like 2,4D can make plants susceptible to pest and blight attack. This is because herbicides have a damaging effect on any plant.

Thus the whole edifice of chemical farming stands or falls on the premise that chemical fertilisers, pesticides and herbicides do not negatively affect the crop (Fig. 24). Yet residues of poisonous substances will be found on almost any type of food crop. In Australia the "allowable amount of residue" is stipulated by the "Clean Foods Act".

Fig. 24 Herbicide damage

Most chemical agricultural agents have a withholding period, to allow most of the poisons to run off before it is allowed on the market.

Organophosphates have a particular feature. They have a short half-life, which means that they break down relatively quickly. The resulting chemicals are more dangerous than the phosphate, but these break down faster still. In this way, the agrochemical companies are trying to forestall toxicity in the environment.

Homeopathic remedies, on the other hand, do not have these disadvantages: since the amounts used are so small, no residues are left that need breaking down. Homeopathic preparations do not work mechanistically, although mechanistic phenomena must result from their action. Rather, they work dynamically, whereby the mechanistic results are nothing but further proof of this dynamic action.

B. Excess

When phosphorus is in excess, the water balance in the plant is disturbed. The process described under *Nat-p*. becomes untenable, because the carbonic acid cannot keep up with the phosphoric acid which is bound to oxygen to form the acid. As oxygen is attracted to hydrogen, water is the result, and waterlogging takes place in the leaves, restricting photosynthesis and ultimately leading to total capillary system collapse.

The plant is very thirsty, sallow and bloated and wilts easily in dry spells. There are oedematous spots in leaves, as in halo blight and stripe blight. Despite the thirst, no nutrient is taken up, as the plant already has excess nutrients and suffers from ill-health as a consequence. The roots have shrivelled skins, feeling as though they are loose around the core of the root. Very dry; yellow with a brown core.
Flowers also appear prematurely where there is too much phosphorus.

C. Deficiency

Deficiency (Fig.23) can lead to problems with whitefly in the field and in potting mixes. In field tests mixed results were obtained, depending on the plant species and the potting mix used.

Fig. 23 Phosphorous deficiency damage

Phosphorus and iron interaction must always be considered when dealing with phosphorus imbalances. Phosphorus is an important element for enzyme binding in the Krebs cycle. A deficiency shows in discolouration of the leaves and stems to dark blue-green. Stunted growth, reduced quantity and quality of the seeds and fruits are the most observable symptoms. Increased senescence and abscission are marked.
Oedematous spots in leaves, as in halo blight and stripe blight.
Photosynthesis is impaired. Generally all diseases where the plants show watery cells and their concomitant problems.
Phos. is an excellent remedy for the effects of lead poisoning, seen so often on road verges both in the city and in the country.
Plants appear sallow and bloated. Flowers appear premature in excess phosphorus. *Phos*. given shortly before flowering causes increased flowering

and thus leads to greater yields.
Phos. profoundly affects the nutrition and function of every tissue, notably the hardest (cambium and bark) and the softest (flowers and fruits). It causes an increase in growth whilst continuous use later causes degeneration.
The plant is very thirsty and wilts easily in dry spells. As can be seen from *Nat-p*., it has a great affinity for photosynthesis and respiration. The leaves can be totally congested and capillary action paralysed, resulting in the collapse of the entire plant. When phosphorus is in excess, the process as depicted under *Nat-p*. becomes untenable, because the carbonic acid cannot keep up with the phosphoric acid which is bound to oxygen to form the acid. As oxygen is attracted to hydrogen, water is the result, and waterlogging takes place in the leaves, restricting photosynthesis and ultimately leading to total capillary system collapse.
The roots have shrivelled skins, feeling as though they are loose around the core of the root. Very dry; yellow with a brown core.
The plant is very thirsty, yet no nutrient is taken up, as the plant already has excess nutrients and suffers from ill-health as a consequence.

D. Clinical

Halo stripe, stripe blight, scald, impaired photosynthesis, necrosis, engorgement of the leaves, chlorosis with smaller leaves than usual with either excess or lack of phosphorus. Droopy appearance, weak plants, rusts, blotches, dry leaf problems, dry rots, soft rots.

E. Appearance

The diseases connected with *Phos*. are similar to *Nat-p*. and *Kali-p*. but more pronounced. Dry rots are similar to *Calc*., *Sil*., *Calc-f*. or *Lap-a*., soft rots, Armillaria root rots, collar rot citrus, bacterial soft rot, to name but a few examples.

Armillaria root rot (*Armillaria* spp)

Leaves may brown around edges, or they may yellow and fall. Wilting and dieback are common. Citrus may set a very healthy fruit crop in spring but collapse in the dry, hot summer.
The roots have a white sheath of fungal hyphae in or under the epidermis, which smells strongly of mushrooms. The woody part is either dry and powdery, or wet and jelly like. Long shoelace-like structures are typical and help spread from root to root and tree to tree.
The fungus is a weak parasite on native trees. It grows on old roots and

stumps, spreading from there. In fall when the weather is humid and the soil is moist, yellowish brown toadstools grow up from the rotted roots and appear on the soil surface. Plants affected: woody ornamentals (Fig. 25) and smaller plants like strawberries, and many fruit trees.

Fig. 25 Armillaria root rot

Bacterial soft rot (*Erwina carotovora*)

The bacteria that cause this affliction are very common in soil or on plants. They prefer succulent plants. In damp weather they cause the most trouble. Plants recovering from pest attack or other disease are also prone to soft rot. The rot is always soft, and smells fetid, with a slimy appearance.

Plants affected

Potatoes

The first symptoms are soft, depressed areas around lenticels. It is easy to distinguish from gangrene by the peculiar softness. Potatoes, and also carrots, are contaminated at harvest time and rot in storage.

Calla lilies

The disease starts below the ground. Water-soaked areas appear at the bottom of flower and leaf stalks, which rot and fall over.

Sweet corn

This has a similar picture; the stems just above the soil becomes water-soaked, dark brown and slimy, and then collapse.

Additional plants

Fleshy parts of succulent plants, roots, tubers, fleshy leaf bases, fruit buds and stems, crucifers, celery, lettuce, ornamentals, irises, dahlias.

Citrus collar rot - (*Phytophthora citrophtera*)

This disease is caused by fungus which inhabits the soil and is only active in

certain conditions. When the leaves go yellow and the tree looks unhealthy, it might have collar rot.
The first sign is gum oozing out of the bark near ground level. After some time, the bark may look wet. Still later, it becomes dry, brittle and split. If not treated, the rot will ringbark the tree. It grows only in damp conditions, when waterlogged or when vegetables or weeds have been allowed too close to the trunk. (Fig. 26)

Fig. 26 Phytophthora root and crown rots

Plants affected

This list begins with the most susceptible and ends with the most resistant: Eureka and Lisbon lemons, Washington navel grapefruit, Valencia rootstock and mandarins. Trifoliata, Citrauge, Troyer and Carrizo are completely resistant.

F. Flowers and fruits

The flowers are abundant and fruits are big with tough skins, but have a watery interior and little taste. In excess phosphorus, flowers come too early and fail to fully develop the stamen. Sterility is the result. Reproduction is fine if *Phos*. is given at the right time.

G. Relationship

Compare: *Ferr*.
Antidote to: Lead poisoning. *Natriums*.
Inimical: *Alum*., *Calc*., *Ferr*., *Mag*., *Mang*., *Zinc*.

Silicea

Pure flint. *Silicea terra*. Silex. Silicon dioxide. SiO_2. Trituration of pure precipitated silica.

A. General

Sil. is one of the key remedies in agricultural homeopathy, as our tests have so far confirmed.

Outside homeopathy, flint as a remedy for internal use is unknown, except in biodynamic agriculture. Hahnemann introduced it into medicine. Through his method of attenuating insoluble substances, its medicinal powers have been liberated and revealed. A large proportion of the earth's crust is composed of silica. Sea sand (*Silicea marina*) is mostly composed of it. Silica is taken up by plants and is deposited on the interior of the stems as well as forming the sheath or bark that holds the plant upright. "Want of grit" is the leading indication for *Sil*.

Sil. type plants grow in sandy soils and there one will find few problems. It is plants that do not belong in those soils which experience problems.

Silicic acid is a constituent of the cells of the connective tissue. The epidermis forms the protective sheath around the cambium where *Sil*. gives strength to the long molecules of the fibre. Excess silica will cripple bark in healthy trees causing death. The suppuration it can trigger is sufficient to destroy a plant or tree. Its indication in die-back has been confirmed in practice with remarkable results. A sapling with die-back, which had only one quarter of the bark left, which was loose and drying out, was given one dose of *Sil*. 6X and the next day, the bark was reattached to the cambium, and after one week, the top branches were growing new shoots and leaves.

Homeopathy has many other uses that can improve the quality of life or even of the products that we make. The idea is a lot less fanciful than it may first appear.

If one understands *Sil*. and its extensive range of action, one will not meet with many difficulties elsewhere. No other remedy has a deeper action on the life of plants, and no other remedy has so wide a spectrum. It is the true polychrest of agriculture, much more so than any other nutrient. Let us have a look at its incredible range.

1. Without *Sil*., no plant can stand upright. It acts on every cell and tissue of the whole plant, giving grit and strength, regulating all cellular processes including reproduction. Silicate minerals make up most of the earth's crust and upper mantle (the lithosphere) and there are millions of tons of silicic acid in lakes and seas, as well as in living organisms. In plants silicic acid forms the supportive substance. It is abundant in algae,

Equisetum and *Polygonum* spp. and the grasses (*Gramineae/Poaceae*.). In birds the ashes of the feathers have a particularly high content.

2. In plants it is not restricted to a supportive function only. As a hydrophile colloid, it has water retention properties, to the extent of multiples of its own weight. Plants growing on stony or arid soils are able to create considerable water reserves, due to this water retentive property. The increased absorption on silicate-rich soils in desert biomes, such as found extensively in Australia, proves its capacity to delay drying out.
3. One single dose is usually sufficient to help generate the seeds of perennials and biennials so that they can lead healthy lives right from the moment they are sown. Silicon is an element of the moon, that is, it has great formative powers. Silicon as a building block ranks with carbon in its importance to plant life and in the production of protective tissues. *Sil*. generally shows aggravation and sometimes amelioration at the full and new moon phases. This confirms its relationship to the moon.
4. Another feature of *Sil*. is its capacity to set up premature flowering. This opens up possibilities as a herbicide, as it prevents seed formation in annual weeds. Here it must be used twice in 2 days. To prevent weeds coming up, or causing problems in broad-acre, spray *Sil*. twice, or more in 10 days, to prevent seed forming, then sow the crop with the last application.

Steiner already warned fruit growers not to use *Sil*. twice, since then there would be no fruits. While this may be excellent for the eradication of weeds, it is also valuable for those who grow flowers as a crop, since it will increase the number of flowers grown.

Tests from cannabis growers in both Australia (SA and NT, where growing is legal for personal use) and Amsterdam, Holland (where in the entire country growing is legal for personal use) have proved that this is indeed the case. From these results we can extrapolate that other plants also should produce more flowers.

Hence chrysanthemum, tulips, roses and other flower-producing plants could give a larger harvest of flowers. If the 30-50% increase in the cannabis harvest is anything to go by, then it is well worth the further experimentation.

5. Another indication is as an aid to germination. Here it must be given only once at planting time. The plant will grow strong roots and firm shoots and leaves.

6. A further application is as a general tonic for weak plants that are puny and small.
7. Given after flowering, *Sil*. will help fruit setting. All these applications have been tested in the field whereby many of the features came as unanticipated reactions. They confirm the findings of Steiner and have given a few more indications. They went far beyond expectations and showed that *Silicea* ranks as one of the most important remedies for which tests have been conducted.
8. On sandy soils *Sil*. works wonders and in spite of a harsh environment (or perhaps thanks to such circumstances), *Sil*. can make plants thrive. It can be used in soils where all appears normal, yet puny plants persist, and on any plant at sowing time, or as protection against mildew and mould, weak cells, exhaustion, fruit setting, striking, transplanting, green manure provision, all bark diseases and die-back.

In short, like no other remedy, *Sil*. and *Sil*. preparations have an effect on every stage of a plant's life, and can be applied correspondingly; they have a profound action, with long duration, from one single application. *Sil*. is a soil remedy of the first order. It is the antidote to *Mang*. in manganese toxicity. In sandy soils it changes the ionisation of the particles from water repellent to water absorbent. The negative effects of sandy soils are counteracted, and plants immediately begin to thrive. It is from tests with this form of application that the idea of using it as a germination aid was conceived, and this was visibly demonstrated in the germination of grass.

From the materia medica we can learn some of the specific uses of *Sil*. It looks possible to attempt to combat desertification with less heartache and speculation with the help of *Sil*. and *Calc*., *Equis*. and *Polygonum*.

Hahnemann gave us the hint that the environment in which the patient lives must be given high priority. A desert is mainly sand, especially in Australia. The earlier statement of Hering, about the previous medicinal power with the strongest influence, alluded to the consequent treatment.

Sil. preparations must be used with caution because, just as *Sil*. can help green a desert, it can equally quickly create one, with devastating effects. *Sil*. is one of the great powers in nature, capable of destruction as well as healing, depending on the skill of the practitioner.

Sil. gave excellent results at Port Bouvard Bowling Club, where patches of bare ground were covered in turf in less than two weeks. 10x4m patches were

quickly covered with strong grass, which has little or no problem with the ever-present fairy ring spot (Fig. 27). We do not hesitate to use it when circumstances demand it.

Fig. 27 Fairy rings

To date, bowling greens are greener, dollar dead spot is cured, timber grass is taller and stronger, plants stay healthier and timber is harder and denser, thus more termite-free. Trees are less prone to die-back, die-back is cured, plants are resistant to pests and diseases and firmer, larger fruits are produced, all thanks to *Sil*.

B. Clinical

Die-back. Premature flowering, herbicide, germination aid, general tonic, transplant shock, soil remedy, weak straggly plants, puny growth, bark and sheath diseases, chlorosis, aphids, bud worm, citrus mite, dried fruit beetle, weeds.

C. Appearance

Chlorosis

Weak, stunted plants that fail to thrive. Failure to regrow after transplants, the plant is green but does not take. Slimy roots. Need for nutrients, but inability to assimilate. Brittle stems and twigs, breaking under strain. Weakness in the generative sphere; small puny flowers, little or no pollen, immature stamen,

fruits refuse to mature and fall before maturity. Hardness of leaves and bark, leather leaf, red spots, ulcerating wounds from pruning, storm or mechanical damage. Burrowing under bark galls, tree cancers.

D. Flowers and fruits

Weakness in generative sphere, immature flowers and fruits, no seed forming, bud worm.

E. Water needs

Need more nutrients than water.

Note

Sil. has many uses. However, the selection of *Sil*. must follow the criteria stated and it must be used with caution.

F. Relationship

Compare: *Lap-a*.
Antidote to: *Mang*.
Complementary: *Calc*.

Sulphur

Brimstone. S. Sublimated sulphur. Trituration of "flowers of sulphur". A saturated solution in absolute alcohol constitutes the mother tincture.

A. General

Sulphur is a chemical element, occurring in nature as a brittle crystalline solid, burning in the air with a blue flame, being oxidised to sulphur dioxide. The reputation of Sulphur as a remedy is perhaps as old as medicine itself. Hahnemann says:

> *As early as 2000 years ago Sulphur has been used as the most powerful specific agent against the itch.*
>
> (Hahnemann)

The domestic use of sulphur as a spring medicine is based on its antipsoric properties. It is this property of sulphur, to divert to the surface constitutional irritants, which renders it the chief of Hahnemann's antipsorics. It is a powerful antiseptic, in no way limited to psora. Cooper states that workers in sulphur mines, though in malarial districts, remain immune from intermittent fevers.

In plants the capillary system is disturbed so as to cause irregular distribution of circulation: congestion, inflammation – as in rusts – blotches and redness run through the remedy. Sluggish circulation. Defective assimilation, emaciation, thin straggly plants that get plenty of nutrients. Dried up plants

which are yellowish and flabby. Photosynthesis is greatly impaired and disturbed. Worse in the heat of summer, worse at night, periodicity of 12 hours.
A dose of sulphur in its crude form improves the qualities for milling and baking in wheat when given shortly before the harvest. Sulphur gets fixed by excess levels of nitrogen or ammonia. It is through the remedies with either ammonia or nitrogen in their composition that these effects can be antidoted. *Kali-n*. can only be used in this respect when there is also a potassium imbalance.
Sulph. is the chronic of *Acon*. in rusts and where *Acon*. fails to cure, *Sulph*. will rapidly cure.
Sulph. acts on all aspects of photosynthesis, from the leaves to the storage of protein.
It has an alternation between problems with photosynthesis and rust eruption. The plant is always worse after rain. Congestion of single parts: roots, stems, leaves or flowers.
In 1966 Wannamaker treated seedlings with dilutions of *Sulph*. from 12X to 20M, using controls. The weight and dimensions of the seedlings plus their contents of sodium, potassium, calcium and magnesium were affected in a significant fashion.
Sulphur does not give a response as a fertiliser component in plants, unless accompanied by phosphorus, calcium or sodium. (See *Calc-s*., *Nat-s*.) A sulphur deficiency is notable when the level of sulphur is lower than 300 ppm. Sulphur of deficient plants had levels of sulphate of 120 - 220 ppm. The amount of dry matter is the standard measurement in most tests, for either toxicity or deficiency. Sulphur deficiencies in the field can only be determined by reduced or limited growth.
Sulphur needs to be processed in the soil, as plants only take up the sulphate. Thus calcium sulphate or sodium sulphate are some of the forms in which it can be applied. Calcium sulphate on alkaline and acid soils can help the plants recover in a short time. In salt-affected areas, sodium sulphate will be indicated. In sandy soils little sulphate is available, due to both retention problems and difficulties with absorption. Leaching is the main problem on sandy soils, which can be reduced through the buildup of a generous organic content in the soil.

B. Sulphur deficiency

Visual symptoms of sulphur deficiency may vary widely, even between different subspecies within the same genus or species of plants. At the 2-4 leaf stage, there may be pinkish discolouration on the leaf midribs or parallel veins. This is usually browner on nitrogen-deficient plants and there is no discolouration on stems and cotyledons as in nitrogen deficiency. Sometimes the leaves curl inwards. Purpling then increases in the interveinal areas. The leaves that newly develop are narrower than normal. The flowers are pale. The purpling spreads to the stem, petioles and midribs. Sometimes the pink is deep coloured, especially the underside of the leaves. New leaves are poorly developed while older leaves turn orange before dying.
Sulphur-based herbicides such as sulfonylurea can reduce the uptake of copper.
Chlorosis and retardation of growth and maturity are the main symptoms in cereals. All cereal crops are highly susceptible to sulphur deficiency.

C. Clinical

Droopy plants, worse after rain. Capillary congestion. Plants emaciated, straggly, thin, weak. Ailments from raw, cutting winds. Worse from warmth, sun, rain, cold and damp weather. Root nematode, root gall, crown gall, spots, rust, blotch, blight, mildew, moulds, rots, both dry and slimy.

D. Appearance

The roots are dry or slimy, with blisters or vesicles. Epidermis comes off the roots as in root nematode, root gall, crown gall. Plants very thirsty. Great need for nutrients with impaired assimilation. Photosynthesis is impaired, lack of oxygen carriers and subsequent congestion of the leaves. Violent capillary congestion, fluids stagnate, sugars not produced, no nitrogen uptake from the atmosphere. Premature flowering, before season, defective pollination. Sterility, no fruit, seed or grains produced.
Sulph. is the greatest general remedy for eruptions. Rust, blotch, blight, mildew, moulds and stripe. Herbicide damage (Fig. 28). Rots, both dry and slimy.

Fig. 28 / 1-2 Herbicide, damage

Chlorosis

Chlorosis and retardation of growth and maturity are the main symptoms in cereals. Nitrogen is of importance as an inimical to sulphur The plant becomes entirely yellow while the stems redden. Nitrogen has similar symptoms but affects the older leaves first All cereal crops are highly susceptible to sulphur deficiency.

Sulphur is a constituent of amino acids. It is essential in the formation of proteins. Sulphur is partially mobile in plants, hence the symptoms are visible in both the young and the older leaves. Ailments from heavy metal poisoning, regardless of the metal: cobalt, lead, arsenic, zinc, cadmium. *Sulph*. is frequently needed where acute diseases do not clear up completely.

Leather leaf

Spots with buff centres surrounded by a diffuse red brown aura are characteristic. As the disease progresses, whole leaves may be covered. The leaves become stiff, rolled and have a leathery appearance. The disease is most severe in high rainfall areas such as the south east of South Australia and western districts of Victoria. Dry spells will curb the disease spread.

E. Relationship

Inimical to: *Cupr*., *Ammoniums*, *Moly*., *Nit-ac*.

Complementary: *Acon*.
Follows well: *Acon*.
Antidote to: *Calc.*, *Cob.*, *Cupr.*, *Cadm.*, *Plb.*, *Ars.*, *Merc*.
Antidoted by: *Zinc*.

Urea

Carbamide. The chief solid substance in the urine of mammals (white crystals). $CO(NH_2)_2$. Trituration or solution.

A. General

Urea has been used in agriculture as a fertiliser. Without it plants are chlorotic with concomitant photosynthesis problems and sluggish circulation in the capillary system resulting in engorgement and puffiness. Cooper mentions that a celebrated breeder of cattle and horses succeeded in getting his animals' skins into an astonishing condition of fineness by giving his animals a tablespoon of old human urine with each meal.
Urea can also be used as a weedkiller.

B. Clinical

Problems with photosynthesis, capillary system and leaves (chlorosis).

C. Relationship

Compare: *Ammoniums.*, *Nit-ac.*, *Kali-n.*
Antidote to: *Moly*.
Complementary: *Moly*.

Zincum metallicum

Elemental zinc. Zn. Trituration.

A. General

Zinc belongs to the magnesium group of metals. It has long been known in the arts. Together with copper it is used in the manufacture of brass. Zinc poisons the brain and nerves in humans and animals. In plants the tissues are worn out faster than they can be replaced. The so called Scrapie in sheep and Mad Cow disease are possibly due to zinc poisoning and can be treated successfully with zinc preparations.
Zinc is essentially a trace element. It is essential to the auxins in cell division and multiplication and in the breakdown of carboxyl compounds, which in excess are toxic to plants. The visible symptoms show as pale-green and yellow leaves. In severe cases they turn dark green. Older leaves are first affected and this may later extend to the younger leaves and shoots. The leaf

tip turns yellow and as the symptoms spread the tips may turn orange, then red, and finally grey and black. All stages of this colour change may be present in a single leaf.

B. Deficiency

In plants this causes a yellowing of leaves in the same direction as the veins, beginning close to the veins and spreading over the leaves. It is different from chlorosis due to lack of iron, in that the yellow is more of a tan colour, thus offering a way to differentiate between the two remedies. Zinc has a strong action on the generative sphere. In flowers, it causes premature pollination and consequent sterility and fewer fruits. The capillary system is engorged in the leaves; the veins stand out. The roots have vesicles, for example in potato scab, and root-knot nematodes. Plants are thirsty, leaves show chlorosis with impaired photosynthesis and capillary engorgement.

Some sulphur-based herbicides will result in a lowering of the uptake of zinc in the plant.

Zinc deficiency can cause reduced growth in the side shoots and so-called “little leaf” syndrome, with particularly small leaves. The shoots can have shortened internodals. At the shoot tips, rosettes form. The coming into leaf of the plants is delayed or fails completely. There is loss of leaves. Chlorosis between the veins with pointed, attenuated leaves. Shoots die off. Flowering is delayed or fails completely. Fruit drops late. No fruit setting.

Zinc deficiency can also result in stunting. Spot symptoms on the upper leaves, spreading into necrosis of the leaf.

Copper and zinc have been added to many fertilisers. The content of these trace elements should be checked when deciding on fertilisers to be used in potentially deficient areas.

C. Clinical

Potato scab, apple and citrus scab, powdery scab, rhizoctonia scab (Fig. 29), violet scab, turf and root nematodes.

Fig. 29 Rhizoctonia damping-off and rot, *Rhizoctonia solani*

D. Appearance

Oat glumes

These are darkened and leaves will twist from the tip down. Oats are more susceptible than wheat and barley. Less than 12ppm is considered deficient. 20ppm is seen as normal.

Wheat

The symptoms are more severe in cloudy weather and wet and cool soils. The signs start on the middle leaves and extend to the new growth. Along the midvein of fully emerged leaves a pale strip is visible, which later turns brown and becomes necrotic. Then the colour turns grey. Chlorosis is sometimes prominent. The leaves may look succulent, i.e. waterlogged. Yellow mottled areas may surround the necrotic patches. The plants then show drooped leaves. (Brennan 1986)

Common scab (*Streptomycin scabies*)

This disease, also known as potato scab, begins as small brown dots on the tubers. As the tuber grows, the dots increase in size and can cover most of the surface. Symptoms may vary from raised corky areas to deep pits. It is usually brought in by infected planting stock. The leaves are first to show signs, with green spots, a different colour from the normal leaf, 3 mm/0.1 inch across. Limestone and alkaline soils and in dry seasons. Zinc deficiency promotes it.

Plants affected: potatoes, turnip, beetroot.

Apple scab (*Venturia spp*.) (Fig. 30)

Fig. 30 Apple scab, *Venturia inaequalis*

This disease is also known as black spot. The initial infection begins with dark green velvety patches on the leaves and developing fruit. Later the leaf lesions become black and slightly raised. By harvest, fruit infection spots are brown and cracked with a grey/black halo. The spores are spread by rain splash. It develops in fallen leaves during winter. In spring, spores infect new growth through wind dispersion. In damp weather at around 15°C/60°F, wet leaves become infected. In some regions, infection time is broadcast so that spray programmes can be accurately timed. Also here zinc plays an important role in both toxicity and deficiency.

Plants affected: Granny Smith, Delicious, Jonathan, Gravenstein. Pear scab is similar but cannot cross-infect apples and vice versa.

Root-knot nematode (*Meloidogyne spp.)*

These nematodes seem to cause more problems in light soils and warm climates. They are 0.5 mm long and cannot be seen with the naked eye, due to thin transparent bodies. The males are in the soil, whilst the females are found in the roots. Eggs are deposited in the soil in a gelatinous mass or in the outer layers of the roots. Up to 2,000 eggs are produced by the female. After hatching, the larvae enter young roots near the tip.

Their saliva causes super large cells, as in cancer, so that the root becomes bumpy. The roots then branch, and the nematodes attack the tip so that a knot is formed. Potato tubers will become bumpy as in common scab. These tubers cannot feed the plant above ground which appears slow-growing, and stunted, wilting readily in hot weather. Leaves are paler green than normal. These nematodes spread through running water, tractor wheels, shoes, spades and ploughs and infested plants.

E. Relationship

Antidoted by: *Sulph*., *Zinc*.
Inimical: *Kali*., *Moly*.
Antidote to: *Ferr*., *Sulph*.
Compare: *Nematodes*, *Calen*., *Tanac*.

9. Companion Plants as Homeopathic Remedies

Allium cepa

Common red onion. Family: *Amaryllidaceae/Liliaceae*. Tincture of the onion, or of the whole fresh plant. Gathered from July to August.

A. General

The onion has been used since ancient times to combat pests in plants. Its use for this purpose goes back to Greek and Roman times. Present-day knowledge is restricted to what we have found in companion plant manuals and old herbals, picked up by some who have made a spray with the crude substance. These brews are often enhanced with garlic (*Allium sativa)*, eucalyptus oil or tea tree oil. As well as providing some protection, they often hamper or kill the predators.

Knock-out pesticides achieve similar ends and while the label "environmentally friendly" is attached to them, this can mean different things to different people. As we alluded to in the introduction, chasing the bug is a never-ending process, since the bugs are but symptoms of a much wider problem. Wrong spacing and excessively large plots of the same species are an invitation to pests and diseases. The latter often occur as a result of bare-soil cultivation where, due to absence of humus, bacteria and fungi in the soil lack their normal sources of nutrition and resort to attacking living plants. Pests are attracted to large plots of the same species, since the balance is severely distorted. Hence by fooling nature into believing there is not a monoculture but an evenly-spaced plot with several plant species, the insects will no longer be attracted to such a plot. If moreover a pheromone gives the impression that large numbers of enemies are present, in the form of predators, nature has been fooled completely.

Warning

Do not use on antagonistic plants such as beans and peas! Only known companion plants should be treated, as nothing is known about its effects on the other plants.

B. Clinical

Onion fly and carrot fly. Good companion to carrots. Rabbits, mice and rats. Weevils (Fig. 31), mites. Helps roses. Scales, aphids, thrips, mites.

Fig. 31 Vegetable weevil, *Listroderes costirostris obliquus*, adult

Hyssopus officinalis

Hyssop. *Lamiaceae/Labiatae*. Tincture of the whole plant.

A. General

Originally a native of the hilly regions of Italy.

Hyssop is a good companion plant for grape vines, increasing their yield. Steiner used a tea on bacterial diseases. In potency it should prove to have wide-ranging action, considering its variety of uses in its crude form. Hyssop and radish are incompatible. Blue hyssop is the best insect repellent, followed by pink and white. This information is found in companion plant manuals and the potencies should confirm it.

It is, on account of its herbal properties, also effective in respiratory ailments. By signature, it must do the same on plants and is therefore indicated in respiratory insufficiency. We see everywhere examples of the Law of Similars, which works in a quintessential way. Like produces like, like attracts like, like cures like, like imitates like and like neutralises like. Therefore, the Law of Similars is applicable in similar situations as much as it applies to diseases and birds. Processes that are similar also work in medicine for plants. The process of prey-predator relationships can be applied as remedies as easily as in remedy-disease relationships, because they are entirely similar.

B. Clinical

Bacterial rots, blights, cabbage butterfly trap, general insect repellent. Respiratory problems. Best action in viticulture.

Mentha viridis/piperita/sativa spp.

Spearmint (*Mentha viridis = Mentha spicata*). Peppermint (*Mentha piperita*) and other garden mints and their wild relatives. *Lamiaceae/Labiatae*.
Tincture of the whole plant.

A. General

Grows on banks of river and damp watery places. *Menth*. is to respiratory problems what *Arn*. is to injuries and *Acon*. to inflammations. Singers will hold their voice when given *Mentha* shortly before a performance. As the bulk of the symptoms falls within the respiratory sphere it may prove to be helpful in plants that suffer from acid rain (loss of leaves and needles; gradual death of whole forest). There are some concomitant spots, specks and blotches, while injuries cause rots.

The various species of mint have much in common and have been held in high medical esteem since ancient times. Cultivated mint is susceptible to disease itself.

Grieve's herbal mentions that it is liable to attacks of rust which in her time was "incurable".

From the homeopathic viewpoint, no disease is incurable, provided the proper remedy is selected. *Acon*. or *Bell*. can cure this disease. Although *Puccinia menthae*, the fungus responsible for rust in mint, develops inside the plant, *Acon*. and *Bell*. are taken up by the plant and can easily cure it. This contrasts with what happens when using conventional agricultural chemicals, which do not penetrate, but are contact sprays.

The various species of mint are effective in keeping pests off cabbage and other *Brassicaceae*. Another use for *Mentha* is to repel of flies, mice and rats. In this capacity *Mentha* is to be used as a diluted essence.

The *Labiatae* all have healing properties for plants and as a family do much good in the garden. A more universal remedy, combining the *Labiatae* into a single remedy for vegetables in general is highly desirable. Although mixtures of homeopathic remedies are not used, it is only so with complexes, as these are not made up of already potentised single substances.

With new preparations, mixing is done at the crude stage. Thus the whole plant of each species of *Labiatae* is mixed, out of which a mother tincture is made. From this tincture, potencies are prepared which deserve a separate proving.

This is because many potentised substances antidote each other, especially so in the same natural order, especially in the complexes, made up of already

potentised substances. When mixed at tincture stage, before the potency is made, it should prove to be a remedy in its own right, much like *Hep*., which is neither *Calc*., nor *Sulph*., although providing symptoms pertaining to both.

B. Clinical

General pest control on the *Brassicaceae*. Fleas on livestock. Mice and rats. Ants, aphids, flea beetles, mosquitoes, gnats, cabbage white butterfly, caterpillars (Fig. 32, 33).

Fig. 32 Cabbage white butterfly, *Pieris rapae*, larva

Fig. 33 Cabbage white, *Pieris rapae*, egg

Tropaeolum majus

Nasturtium. *Tropaeolaceae*. Tincture of the seeds/whole plant.

A. General

Nasturtium is a companion plant that has the proven ability to protect other species against different species of aphids, according to Hylton, Grieve and others. Thus a homeopathic dilution ought to be able to confer on plants a

type of immunity to aphid infestation.
From experiments with plants it was noted that aphid infestation was only slightly influenced by *Trop*. in the 3X potency. More provings need to be conducted to establish with certainty the effects of the remedy. Experiments carried out on fennel infested with black aphid have been conducted. Tests and provings on a larger variety of plants in different potencies are warranted.

B. Clinical

White aphids, squash bugs, whitefly in tomatoes. Nematodes (Fig. 34). Mealy bug (Fig. 35).

Fig. 34 Wheat seed-gall nematode, *Anguina tritici*

Fig. 35 Woolly apple aphids

Ocimum spp. minimum/basilicum

Basil. *Lamiaceae/Labiatae*. Tincture of the whole plant.

A. General

Basil, as a companion plant, protects tomatoes from both pests and diseases

… almost as if giving them a wrap-around shield …

(Hylton)

For those who grow tomatoes as a commercial crop, and who have little space, making companion planting impractical, homeopathic remedies can solve the problem.
Thus, bud worm, russet mite, whiteflies, tomato mite, red-legged earth mite and also the two-spotted mite can all be treated with *Oci-b*. Anthracnose (Fig. 36), bacterial canker, fusarium wilt, spotted wilt (Fig. 38), mosaic virus and blossom end rot can also be treated. It may not be suited to the treatment of other plants, because it is a companion plant to tomatoes.

Fig. 36 Anthracnose on tomato, caused by *Colletotrichum coccodes*, symptoms
Oci-b. is a constitutional remedy for tomatoes because of its special affinity. In companion plants, this phenomenon is frequently encountered, and can provide new insights into the relationships between the different remedies in the context of human treatment. From further study, much can be learned about the internal relationships between many different remedies that to date have not enjoyed such extensive scrutiny.
Other varieties of *Ocimum*, like *O. canum*, *O. gratissimum* and others are equally efficacious and may be substituted for *Ocimum minimum* in their native countries, such as India, Japan, Indonesia, Malaysia, Persia and Africa, or South America.
Basil will also improve the taste of the tomato crop.

B. Clinical

All pests and diseases of tomatoes. Bud worm, russet mite. Flies. Mosquitoes. Tomato mite. Red-legged earth mite. Two-spotted mite. (Fig. 37)

Fig. 37 Spider mites, infestation

Ricinus communis

Castor oil plant. Palma christi. *Euphorbiaceae*. Tincture or trituration of fresh seeds or fresh plant.

A. General

From Clarke's Materia Medica we learn that the leaves of this plant have an especially powerful effect on the breast and the generative sphere. From this fact one can deduce the action on the flowers and fruits on plants. As it is a good companion to grapevines, its action on grape flowers and fruits is borne out by the provings. As with all plant pest and disease remedies, analogy is the most often used means of determining its effects on plants. Subsequent provings usually – but by no means always – confirm the analogy.
Sometimes however it proves to have additional features not arrived at through analogy, but through either clinical experience or provings.
From the materia medica it has become clear that it acts as a vermifuge. However, it needs to be used with caution, as too high a dose can severely purge the animal and debilitate it to a great extent. Its action on nematodes is analogous.

B. Clinical

Pests in viticulture: vine mite, rust mite, grapevine moth, hawk moth, scale.
Pests in *Cucurbitaceae*. Worms.

Fig. 38/1 Capsicum affected by tomato spotted *Wilt virus, Tospovirus* (TSWV), symptoms

Fig. 38/2 Tomato spotted *Wilt virus,Tospovirus* (TSWV), symptoms

Fig. 38/3 Tomato spotted *Wilt virus,Tospovirus* (TSWV), symptoms

Salvia officinalis

Sage. *Lamiaceae/Labiatae*. Tincture of fresh leaves and blossom tips.

A. General

Salv. is another remedy from the order of *Labiatae* and is as effective as the other species. Because its range is limited to the *Cucurbitaceae* and *Brassicaceae*, we need to develop a remedy from the different species mixed together at the mother tincture stage, to produce a plant pest remedy of wide range, thus creating a plant pest polychrest.

Because many remedies antidote each other in the potencies, complex prescribing is folly. Yet before potentisation, these plants do not antidote in their crude form and as such can be made in a special tincture that comprises all pest remedies of this order.

To this end, equal parts of each plant in both weight and volume are put together to produce the mother tincture, from which the potencies are produced. Provings will be conducted with these potencies on all types of plants and a diverse range of pests and disease will receive clinical tests.

Muller and Haines (1964) of the University of California at Santa Barbara observed that the dew gathered from *Salvia* contains a germination inhibitor. In potency it can be used in weed control.

Do not apply on young plants.

B. Clinical

Cucurbitaceae and *Brassicaceae* pests, mites, moths, aphids, cabbage fly. Other crops of *Cucurbitaceae* such as melon, cucumber, squash etc. Carrot fly (Fig. 39). Weed control.

Fig. 39 Carrot (rust) fly, *Psila rosae* (=*Chamaepsila rosae*), larvae

C. Compare

Foen. in weed control.

Sambucus nigra

Elder. *Caprifoliaceae*. Tincture of fresh leaves and flowers.

A. General

Grows in hedges in moist places. The leaves of *Samb*. have an unpleasant odour when bruised, which is offensive to most insects, and a decoction of these leaves is sometimes used by gardeners to keep caterpillars from delicate plants. It was the favourite medicinal plant of Hippocrates. The active ingredient in its crude form is hydrocyanic acid.

Samb. was confirmed in the field after its description in the companion plant manuals.

If sheep with rot can get at the bark and young leaves, they will soon cure themselves. Millspaugh says that a decoction or ointment of flowers and leaves was applied to large wounds

> *… to prevent deleterious effects from flies.*
>
> (Millspaugh)

There is a relationship with *Valer*. and *Vib*. on account of an identical acid present in the plants. We will consequently include pathogenesis of *Valer*. and *Vib*.

Oedematous swellings, especially in twigs, stems and leaves. The capillaries do not give passage to sap, and waterlogging results in these places. The plant can take up carbon dioxide but cannot release oxygen. Evaporation is increased during the day, but ceases entirely at night.

B. Clinical

General insect repellent, particularly against caterpillars. Bud worm, army worm. Sawflies. Diamondback moth (Fig. 40). Web worm, cut worm. Potato moth. Cluster caterpillars. Spitfire. Fly strike and rot in sheep. Aphids.

Fig. 40 Diamondback or cabbage moth, *Plutella xylostella*, larva

C. Relationship

Compare: *Bomb-pr*., *Valer*., *Vib*.

Satureia hortensis

Savory. Summer savory. (Winter savory is *Satureia montana*.)
Lamiaceae/Labiatae. Tincture of the whole plant.

A. General

In terms of companion planting, it is regarded as less effective than basil. We have not been able to verify this, but as the process of potentisation brings out increased medicinal power, the homeopathic preparation does not have the disadvantage found in the companion plant. The recommendations of companion planting books, to go over the beans regularly, wiping off eggs and larvae of the Mexican bean beetle, are not necessary when using the potency, thus saving many person-hours of labour.
From tests it has proved to be equally effective for all pests and diseases in beans.

B. Clinical

Diseases and pests of beans. Mexican bean beetle (Fig. 41), blossom thrips, bean fly, pod borer, angular leaf spot, anthracnose, bacterial brown spot, halo blight, leaf roll, rust, wilt. General insect repellent.

Fig. 41 Mexican bean beetle, *Epilachna varivestis*, adult

C. Relationship

As a prophylactic *Sal-ac*. can be used.
Compare: *Nat-sal*. and/or *Sal-ac*.

10. Plant Pests

Introduction

We first have to define what a plant pest really is. A pest is an entity which, by its behaviour and lifestyle, is damaging to the food plants we grow. There are a range of insects, arachnids, rodents and other animals that could be called pests in this narrow definition of the word. Generally, in agriculture we consider every such creature that damages the crop a pest. In conventional agriculture, the aim is to eradicate the pest, without addressing the conditions that gave rise to it in the first place.

The first condition has to do with spacing. In nature, all plants grow in a manner that leaves sufficient space for other plants; even if plants grow closely together, there will be scope for the harmonious development of other types. Moreover, circumstances generally prevent large numbers of the same species crowding a particular spot or even a larger surface, except when conditions and circumstances demand or allow it. Hence variety is the spice of life for nature.

Humankind has the need and the tendency to grow just one crop in a relatively small space, to enable the largest return with the least possible effort. However, such an approach also has certain drawbacks, the first of which is that we do not seem to have any control over the conditions and circumstances influencing that crop. Secondly, since this is so, it is almost impossible to avoid the loss of at least part of the crop. While 5-10% is reasonable and acceptable – insects have to live too – we note, however, that a crop loss of 20-30% is the norm, regardless of the amounts of poison used to kill the supposed pests.

It is therefore imperative and self-evident that we need a different approach to the entire problem, since the conventional methods of control are largely ineffective, and they also poison our food and environment. The pests only develop resistance, creating the need to use ever-stronger poisons, in ever-increasing doses, which will only affect us and the environment in an increasingly negative manner.

In this book, we show the reader not only a different approach but an entire range of new remedies to control pests in the garden and as a commercial grower in the field.

We have seen fit to improve on the first edition by making two significant

and simultaneous improvements. The first is the grouping together of all the remedies used for one or several types of insect pests, making the finding of a remedy much simpler. By abandoning the alphabetical approach in favour of the grouping by problem, we have sought to make the book even more useful. You will also find a second division in the book: into natural orders of crops. This is based on the fact that certain orders and families attract particular types of pests.

The *Graminae* have little more than aphids and locusts to deal with, while the *Brassicaceae* are plagued by caterpillars, whitefly and aphids. Hence some remedies are useful only on certain plants and not on others. If a remedy is useful for more than one order of plants, it will be mentioned under that order, but referring back to the complete description. Hence a remedy that can be used on several food plants of different orders will be mentioned under each order.

The remedies are grouped in order of importance, which means that the most important remedy or remedies are mentioned first. Progressing through the remedies, they become less and less important, but this does not mean they should be seen as less valuable. The very last remedy mentioned may be the exact one that you need for your particular problem. Hence rank only means that this remedy is more useful because it can treat problems that are more commonly found.

Naturally, we have sought to expand on the number of remedies that can be used in this way. To achieve this, we have scoured the literature on the use of companion plants and expanded the research into the use of predators as possible remedies. We have also directed research towards the elementary substances, since they had not been tested extensively before the appearance of the first edition. The indications mentioned there are nearly all founded upon toxicity and deficiency reports.

Under the former we have included such remedies as *Allium*, *Phaseolus*, *Ocimum* and *Mentha piperita*. It is difficult for farmers to grow the companion plant together with the crop, since this poses problems at harvesting. To enable the same protection, these plants have been turned into remedies and used for that purpose. The latter we proposed in the first edition to provide a possible principle. We discovered this is indeed the case.

We have been interested mainly in those remedies that are promoted as live insects and arachnids to combat the pest in either the greenhouse or in the

field. This approach is called Integrated Pest Management or IPM for short. There are several drawbacks to IPM, which do not exist with the use of homeopathic remedies.

The first concerns the difficulties encountered in rearing these predators or parasites. Due to demands for constant climatological conditions during their generation, the times when the pest-controlling species is ready for use may not coincide with the appearance of a pest, since natural weather conditions may delay or speed up their development.

Moreover, the the excessive use of fertilisers like phosphorus and potassium may trigger pest population explosions if the pest-controller is not available.

The second problem is that predators and parasites behave differently during different stages of their life cycles. They may attack pests as larvae, but in some instars or in the adult phase they may have no action on pest populations. The pests, too, may vary in their vulnerability to specific enemies at different life stages. This limits the success rate and the time period in which they can operate.

The third is that they are often migratory in the adult stage, so that at each new infestation they have to be reintroduced.

Finally, prevention of infestation or reinfestation is not always possible with this method.

To be certain all stages are covered, we could make these remedies from all the different instars of the predator or parasite. However, experience with the remedy *Coccinella* suggests that a remedy made from any life cycle stage will act effectively; *Coccinella* is made from the adult beetle, yet gives all the protection necessary.

Fungal and bacterial organisms responsible for natural diseases of insect pests are also used in IPM to attack pest species. These are also promising for homeopathic application. *Bacillus thuringiensis*, described below, is an example of a microorganism obtained from an IPM firm and tested as a remedy in homeopathic form.

10.1 General Insect Remedies

General Remedies

A. Latrodectus spp. katipo/hasselti/mactans

Katipo spider (*Latrodectus katipo*), Australian redback spider (*Latrodectus hasselti)*, American black widow spider (*Latrodectus mactans*). Class: *Arachnida*. Order: *Araneae*. Family: *Theridiidae*. Tincture of the live spider. Trituration of the live spider.

General

The redback spider is a ferocious predator whose poison is even dangerous to man. Those bitten by this spider require direct help from a poison centre, since the poison decomposes the blood and causes its degeneration. Its poison is related to that of the papal cross spider, *Aranea diadema* and to the black widow spider. It resembles the black widow closest both in effect and in appearance.

The animal is reasonably sized and can be immediately recognised by the red spot on its back. When this predator is present in the garden, it is best to not disturb it, because it is not only aggressive, but its presence is beneficial.

As a remedy it is very useful against most pests, since the spider is a voracious hunter. Therefore, it is of almost universal use in the garden and at home, for a large variety of pests that plague food crops and our ornamental plants.

All three Latrodectus remedies used in homeopathy, including the lesser-known Katipo species native to New Zealand, are effective.

B. Porcellio and Oniscus spp.

Common slater. Woodlouse. Sow bug. *Porcellio scaber*. *Oniscus asellus*. *Oniscus armadillo*. Subphylum: *Crustacea*. Order: *Isopoda*. Trituration of the live creature.

General

Oniscus and *Porcellio*, along with *Armadillidium* roly-poly pill bugs, are related isopod species. Clarke describes the traditional reputation of *Oniscus* in epilepsy.

Adult woodlice are 9-15 mm/0.3-0.6 inch long, oval in shape and reasonably flat. They are found in grey, brown and pink varieties, depending on age. They feed on organic matter, chewing the stems and cotyledons of seedlings. They can be serious pests.

Excellent control was achieved for up to three months from a single dose of the freshly prepared 6X potency.

Clinical

Infestations of common slaters or woodlice. (*Porcellio scaber, Oniscus asellus* and similar spp.). Pill bugs, roly-polies (*Armadillidium vulgare* and similar spp.).

Compare

Compare: *Canth*.

C. Tarentula hispanica/cubensis

European wolf spider (*Lycosa tarantula = Tarentula hispanica*). Unknown Caribbean spider (*Tarentula cubensis*).

General

The term “tarantula” is now normally used to describe large, hairy spiders mainly from the *Theraphosidae* family. It was originally applied to a wolf spider found in southern Europe (hence the name “*hispanica*” and the name derived from the Italian town of Tarento). This was famous – or infamous – for a bite reputedly causing tarantism, which forced one to dance at the slightest sound of music.

For historical reasons, the spelling “*tarentula*” is found in homeopathic literature. The identity of the decomposed specimen used to prepare the remedy known simply as *Tarentula cubensis* (“Cuban tarentula”) is unknown.

The tarantula spider bite causes a wound that takes up to six weeks or even longer to heal and which causes an ulcer-like inflammation of the tissues that returns every year on the exact date of the initial bite.

This is an important observation that provides a possible signature for its use in plants. This is a useful indication, because it might be possible to apply it in such a dose as to avoid this recurrence in plants after pest infestations, thus providing a form of permanent protection against such pest attacks. However, because this has not been tested in the field, it is no hard and fast rule that must be followed, but merely an observation that deserves further study.

D. Theridion

South American widow spider. *Latrodectus curacaviensis = Theridion curassavicum* (“Theridion from Curaçao”). Class: *Arachnida*. Order: *Aranaeae*. Family: *Theridiidae*.

General

This spider has orange-red markings and is often found on orange trees from the Caribbean southwards. It is another useful remedy against plant pests. The spiders form an important class of remedies, because they are – like polychrests – effective against a broad range of pests. In the treatment of humans, the symptoms are generally rather similar, with differences in their modalities of time, severity, place and repetition. They also differ somewhat in terms of the mental symptoms.

Mind symptoms in plants

While such mental symptoms may at first appear not to have much significance in plants, we must not forget that many of our food plants and kitchen herbs and spices show extensive mental symptoms when processed as homeopathic remedies. Therefore, it is no exaggeration in declaring that such mentalities are also present in living plants. Indeed it is a logical conclusion.

The relationships between remedies have therefore a stronger and more important role when we consider them in relation to the plants we grow for food and as spices. After all, if these plants show such strong mental symptoms in their potentised form, it is logical to suppose that they also have this mentality as living entities. We may use the example of *Chamomilla,* to illustrate the point.

Cham. has a strong tendency to anger and irritability when used as a remedy. Hence the remedies that are its antidote in the materia medica will also have a strong action on the living plant. It is useful to conduct experiments to ascertain these effects on the plant and the remedy produced from such treated plants. The influence on the mentality of *Cham*. as an entity must be evident from its processing into a remedy – it can either increase irritability and anger or it may completely neutralise it.

Steiner used *Cham*. as a composting agent: it starts the composting process and helps it along when it stagnates. Composting is similar to digesting and it is significant that *Cham*. has a strong influence on colic in babies, colic being a digestive disturbance. Composting may thus be seen as a way in which nature organises its anger in a positive and constructive manner.

Any remedy that is the antidote, follow-up, complement, chronic state or inimical to *Cham*. must therefore have influence on its capacity to produce being potentised as a remedy.

From this example it is evident that such relational actions must exist in all plants we grow for food and use in the garden as remedies. While a remedial action always involves a change for the better and is thus positive, we can easily conceive of wrong use having a negative influence. It seems that interesting experiments can be conducted to either prove or disprove the ideas set out in these paragraphs. From experience and intuitive realisation, the likelihood that such experiments will confirm these notions is however greater than 50%, simply because consciousness lies at the foundation. Dead matter will always act in an expected and prescribed manner, simply because it lacks life and consciousness as its most important symptoms. Living entities do not always react in the expected manner, because of individuality, but since remedies act in fixed recognisable patterns, their symptoms can be used as guiding principles. As Hahnemann noted in the Organon:

> *Each life-impinging potence, each medicine, alters the tuning of the life force more or less and arouses a certain alteration of a person's condition for a longer or shorter time.*
>
> (Organon § 63)

This is because:

> *Every true medicine works at all times, under all circumstances, on every living (human) being, and arouses in him its peculiar symptoms. These symptoms will be distinctly conspicuous if the dose is large enough.*
>
> (Organon § 32)

Treatment of Crucifers (*Cruciferae/Brassicaceae*)

A. Mentha viridis/piperita and similar spp.

Spearmint (*Mentha viridis = Mentha spicata*). Peppermint (*Mentha piperita*) and other garden mints and their wild relatives. *Lamiaceae/Labiatae*. Tincture of the whole plant.

General (see also Chapter 9)

The various species of mint are effective in keeping pests off cabbage and other *Brassicaceae*. Another use for *Mentha* is the repelling of flies, mice and rats. In this capacity *Mentha* is to be used as a diluted essence.

Clinical

General pest control on the *Brassicaceae*. Fleas on livestock. Mice and rats.

Ants, aphids (Fig. 42), flea beetles, mosquitoes, gnats, cabbage butterfly (Fig. 43), caterpillar.

Fig. 43 Cabbage white, *Pieris rapae*, adult

B. Bacillus thuringiensis

A soil bacterium. *Bacillaceae*. Order: *Bacillales*. Family: *Bacillaceae*. Tincture of the commercial brew.

General

The introduction of the soil bacterium *Bacillus thuringiensis* (Bt) for pest control looked at first to be very promising. It appeared to kill serious pests, like caterpillars, beetles and fly larvae, while being non-toxic to humans, spiders and other predators. By transferring the genes and encoding these in crop plants, it was assumed that the plants themselves would be the insecticides.

Bt has a disadvantage that is all the more glaring, considering its limited period of usefulness. This is due to the dosage, which is aiming at a knock-out effect. While this may work the first few times, after a period the pest begins to develop resistance, simply because it must somehow perform its job – rebalancing the unnatural spacing caused by interfering humans.

Complete control can never be achieved, simply because in nature there is also no complete control. Each species of plant has to sacrifice 5% of its numbers to maintain the insect populations, which are necessary, once the balance is lost, for its restoration. Naturally each farmer must accept the fact that 5% of his crop will be lost to disease, damage from storms and insects or other influences.

Bt in potency has none of the disadvantages of its crude form, since it works at the subtle rather than the material level.
Minimum dose means the smallest possible amount. All effects produced in nature are always caused by the smallest possible expenditure of energy. Nature does not like waste, therefore the waste of material doses will create the opposite effects to what we want to achieve – sooner or later, depending on the sensitivity of the entities involved and the volatility of the product used. With volatility we mean here the severity of the effect produced.
Of course it is to be expected that insects will develop resistance, since the method used to get rid of them is the wrong method. Homeopathic remedies do not have the disadvantage that resistance develops, simply because they are aimed at the plant, not at the insect. If we were to seek to destroy the insects with our remedies, everyone who used them would soon find the same resistance problem rearing its ugly head. The advantage of the homeopathic approach is in the fact that the insect is interesting only as a symptom and never as something that needs to be removed by being killed.

Clinical

Caterpillars. Beetles, flies and fly larvae, such as whitefly, cabbage moth and cabbage fly, carrot fly. (Fig. 42, 43)

Fig. 42 Green apple aphid, *Aphis pomi*

C. Pyrethrum

A product of certain chrysanthemums, especially *Chrysanthemum (Tanacetum)* and *Chrysanthemum* (*Tanacetum*) *coccineum*. Family: *Compositae/Asteraceae*.
Tincture of the commercial brew, also known as pyrethrin.

General

Chrysanthemums generally have a natural resistance to pests, hence their popularity with flower growers. They have been used to protect crops from

insects and kill lice for centuries. Some organic gardeners make “teas” from the flowers to spray their plants with, making sure the dilution rate is sufficiently high that the insects do not develop resistance.
In an attempt at being “ecologically sound” the agribusinesses have tried what growers already knew – using plants to combat pests. They have isolated the two forms of pyrethrin and concentrated them in order to increase the strength of action. Related synthetic forms have also been developed. Although the idea of “natural” insecticides has appealed to producers and buyers, experience in the field has demonstrated that resistance rapidly develops. Again, we believe that the practice of massive dosing is the main factor responsible for this problem. Therefore we have potentised the pyrethrins and discovered that such build-up of resistance is either non-existent or, if it does occur, progresses so slowly that remedial measures can be taken before the treatment becomes completely ineffective.

D. Salvia officinalis

Sage. *Lamiaceae/Labiatae*. Tincture of fresh leaves and blossom tips.

General (see also Chapter 9)

Like mint, sage is another useful member of the *Labiatae/Lamiaceae* family. However, the range of *Salvia* is limited to the *Cucurbitaceae* and *Cruficerae/Brassicaceae* families.
Muller and Haines (1964) of the University of California, Santa Barbara observed that the dew gathered from *Salvia* contains a germination inhibitor. In potency it can be used in weed control.
Do not apply on young plants.

Clinical

Cucurbitaceae and *Brassicaceae* pests, mites, moths (Fig. 44), aphids, cabbage fly. Other crops of *Cucurbitaceae* such as melon, cucumber, squash etc. Carrot fly. Weed control.

Fig. 44 Codling moth, *Cydia pomonella*, adult

Compare

Foen. in weed control.

E. Hyssopus officinalis

Hyssop. *Lamiaceae/Labiatae*. Tincture of the whole plant.

General (see also Chapter 9)

Hyssop is the third of a trio of labiate remedies found to be effective in treating crucifer pests, along with its herbal relatives mint and sage. Its usefulness as a grapevine companion plant also indicates its versatility, though it is incompatible with radishes.

The homeopathic application of herbal remedies and the use of companion plants information on the remedy (in terms of bacterial diseases of gravevines, respiratory ailments and the relative performance of different-coloured varieties as insect repellents) is discussed in the chapter on companion plants.

Clinical

Bacterial rots, blights, cabbage butterfly trap (Fig. 45), general insect repellent. Respiratory problems. Best action in viticulture.

Fig. 45 Cabbage white, *Pieris rapae*, adult

Treatment of Cucurbits (*Cucurbitaceae*)

A. Thuja occidentalis

Yellow cedar. *Arbor vitae*. Tree of life. *Coniferae*. Tincture of fresh green twigs.

General

Grows upon the rocky banks of rivers, low swampy spots.

The volatile oil is used in the West Indies as a powerful insecticide.

Teste mentions in his materia medica that thuja wood does not decay. He also agrees with Hahnemann’s idea of signature, given that the

> *… resinous callosities of the stems and leaves of thuja might have seemed an indication that the plant is a specific for sycosis and warts.*
>
> (Teste)

According to Hahnemann, sycosis is the constitutional disease resulting from constitutional (i.e. hereditary) gonorrhoea. The characteristic manifestations are warts, either dry or soft, cancers and cauliflower-like excrescences.
From the provings it appears that Hahnemann was right and this is corroborated by Kent. Hering says that it acts on the fluids causing:

> *… dissolution of the fluids, which become acrid. It disturbs the digestion.*

In the vegetable sphere:

> *A surplus of producing life; nearly unlimited proliferation of pathological vegetations, condylomata, warts, sycotic excresences, spongy tumours. All morbid manifestations are excessive, but appear quietly, so that their beginning is scarcely known.*
>
> (Hering)

Through analogous diagnosis, this can easily be related to galls, either hard or soft, or even soft cancerous growth on trees. A good example is the fungus gall of wattles (*Uromycladeum* spp.).
Many borers can be treated with *Thuj*., as it is a remedy that can neutralise "animal poisons", such as vaccination and its negative effects in humans. Thus many insects that attack plants and trees will respond to this remedy, especially if disease is the result of pest attack, like barley yellow dwarf virus, mosaic virus and other viral and bacterial disease.
Extensive testing must be carried out to confirm this, although analogy is also here the leading feature for its indications. Giving *Thuj*. "internally" – i.e. watering the roots, so it can be taken up – produces more striking effects than spraying, as was found in some of the tests.

Clinical

Pests in general, mites, hawk moth, scale, blister mite, rust mite. Pests in *Cucurbitaceae*. Cancer in trees. Curly top on peach. Galls. Farcy and grease in horses. Fungus gall.

Here is a test report from India on control of tobacco mosaic virus (TMV) from the journal Homeopathica, September 2003 by B. P. Singh, G. Gupta and K. M. Srivastava.

Homeopathic drugs inhibit TMV

The control of plant virus diseases by homeopathic drugs has been tried by a number of workers in the past, and in view of the encouraging results obtained against tobacco mosaic and papaya mosaic viruses a few more drugs have been tried in the present investigation.

Arsenicum album, *Thyroidinum* and *Uranium nitricum* of 3X potency were raised to 7X potency and converted into a liquid base using distilled water. *Sulphur* 100C, *Carcinosinum* 1M, *Morgan* 30C, *Dolichos* 6C, *X-ray* 30C, *Influenzinum* 200C and *Vaccininum* 30C were raised to the next potency by adding 99 ml of distilled water to 1 ml of the drug.

Culture of tobacco mosaic virus was maintained on *Nicotiana tabacum* var. White Burley, but the experiments were carried out on *Nicotiana glutinosa*, a hypersensitive host of TMV. *Sulphur*, *Carcinosinum*, *Morgan*, *Dolichos*, *Thyroidinum*, *Arsenicum* and *Uranium nitricum* were sprayed on the plants after 15 minutes and 24 hours after virus inoculation while *Influenzinum*, *X-ray* and *Vaccininum* were sprayed twice (48 hours and 24 hours) before virus inoculation.

Inoculum of TMV was prepared by macerating young infected leaf tissue in a pestle and mortar with an equal amount of pH 7 phosphate buffer. The slurry was centrifuged at 5,000 rpm for 17 minutes and the supernatant thus obtained was used as inoculum. Inoculations were made by rubbing on leaves dusted with carborundum powder. Lesions were counted on the fourth day of virus inoculation and the percentage of inhibition was calculated by comparing with control plants.

Influenzinum, *Vaccininum* and *X-ray* when sprayed before virus inoculation on *N. glutinosa* plants did not provide any kind of protection. Instead, the number of lesions were greater in treated plants than in controls.

Out of seven drugs tried from the therapeutic point of view, *Arsenicum*, *Thyroidinum* and *Uranium nitricum* were found to be more effective in reducing the number of local lesions compared to *Morgan*. Sprays of *Dolichos*, *Sulphur* and *Carcinosinum*, however, had no marked effect in reducing the number of local lesions. (Table 1)

Table 1
Effect of post-inoculation sprays of some drugs on number of local lesions produced on N. glutinosa by tobacco mosaic virus.

Drugs	Potency	Percent reduction in number of lesions over control
Thyreoidinum	7X	45
Arsenicum	7X	44
Morgan	31C	21
Uranium nitricum	7X	46
Dolichos	7C	0
Sulphur	101C	0
Carcinosinum	1001C	0
Influenzinum	201C	↑
Vaccininum	31C	↑
X-ray	31C	↑

The search for inhibitors of plant virus multiplication has not been very successful in spite of continued efforts spanning several decades. Our investigations as well as previous records have yielded enough encouraging results to explore the use of homeopathic drugs for prevention and control of plant virus diseases.

It is obvious that a systematic approach towards control of viral maladies of the plants through homeopathic drugs might yield some reliable and concrete data. It would be worthwhile to work on two fronts:

(i) to prepare drugs from infected plant tissue in accordance with the theory of homeopathic nosodes, observing their prophylactic effects against plant viruses

(ii) to screen various available drugs on healthy plants for development of virus- like symptoms (proving) with a view to selecting the drugs for controlling different viral diseases. Such an approach might enable us to make headway in the future towards the control of plant viruses which are otherwise difficult to manage.

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This research was conducted at the Plant Virology Laboratory, National Botanical Research Institute, Lucknow, India, in 1979.

B. Bufo

The toad. *Bufo rana = Bufo bufo*. Class: *Amphibia*. Family: *Bufonidae*.
Tincture of the poisonous secretion of the skin in rectified spirit.

General

The use of this remedy is very ancient and goes back to Greek and Roman times. It was also mentioned in a book on pest control dating back to the 1700s. It recommends keeping a toad in a bucket with shallow water; when diluted further, this would provide a repellent even for voles, mice, rats and other rodent pests of the house and farm. On crops it was used against caterpillars and whitefly as well as aphids and scale. Of course, having a toad in the garden also helps to control insect pests, but the toad will be as indiscriminate as a pesticide and will also kill other useful predators. Naturally, the poisonous secretions of the toad can better be used in potency to protect plants against insect pests.

Clinical

Insect pests in general. Caterpillars, whitefly, aphids and scale. Possible a rodent repellent.

Appearance

Infestations of insects like aphid and whitefly, which after infection will become fluffy and white, soon turning to bright orange. It controls in regular biological control about 75% of the population. In the potency it controls 99%.

Water needs

Relatively high, because of insect infestation.

Relationship

Compare: *Bomb-pr*., *Samb*., *Mant-r*.
Complements: *Carc*., *Chrysop*., *Cocci-s*., *Staphycoc*.

Treatment of True Grasses (*Gramineae/Poaceae*)

Viburnum opulus

High cranberry bush. Cramp bark. Water elder. *Caprifoliaceae*. Tincture of fresh bark.

General

Grows on river banks.

In America, the wild species, says Hale, is called “cramp bark”. Native Americans used it in spasmodic diseases. Viburnum smells like *Valer*. or *Samb*. and has equal repellent qualities to these two. By analogy from Hale’s reports of its use to prevent miscarriage, it can prevent early dropping of grains or fruit if applied at the first sign of this problem.

When this problem occurs, the roots look pale and the epidermis may be dry. Nutrients may not be taken up, CO_2 is also defective and the plant is low in protein or starch. As with *Samb*. and *Valer*., *Vib*. has profuse evaporation. The leaves do not release CO_2 at night. Photosynthesis and respiration are not up to par. The whole digestive system is severely affected whilst the capillary system appears inactive. The female parts of the flowers are affected, resulting in early dropping of fruits. Timely application of *Vib*. will help fruits to mature and ripen before they fall.

Clinical

General insect repellent.

Water needs

Normal to higher need.

Relationship

Compare: *Bomb-pr*., *Samb*., *Valer*.

Treatment of Pulses (*Leguminosae/Fabaceae*)

Satureia hortensis

Summer savory. *Lamiaceae/Labiatae*. Tincture of the whole plant.

General (see also Chapter 9)

From tests it has proved to be equally effective for all pests and diseases in beans. (Fig. 46)

Fig. 46 Limabean vine borer, *Monoptilota pergratialis*

Clinical

Diseases and pests of beans. Mexican bean beetle, blossom thrips (Fig. 47), bean fly, pod borer. General insect repellent.

Fig. 47 Thrips (*Thysanoptera* order), damage

Relationship

As a prophylactic *Sal-ac*. can be used.

Compare: *Nat-sal*. and/or *Sal-ac*.

Treatment of Nightshades (*Solanaceae*)

Sambucus nigra

Elder. Family: *Caprifoliaceae/Adoxaceae*. Tincture of fresh leaves and flowers.

General (see also Chapter 9)

The leaves of *Samb*. have an unpleasant odour when bruised, which is offensive to most insects, and a decoction of these leaves is sometimes used by gardeners to keep caterpillars from delicate plants.

Samb. was confirmed in the field after its description in the companion plant manuals.

Clinical

General insect repellent (Fig. 48), particularly against caterpillars. Bud worm, army worm. Sawflies. Diamondback moth. Web worm, cut worm. Potato moth. Cluster caterpillars (Fig. 49). Spitfire. Fly strike and rot in sheep. Aphids.

Fig. 48 Spitfire grubs, *Perga* spp., larva

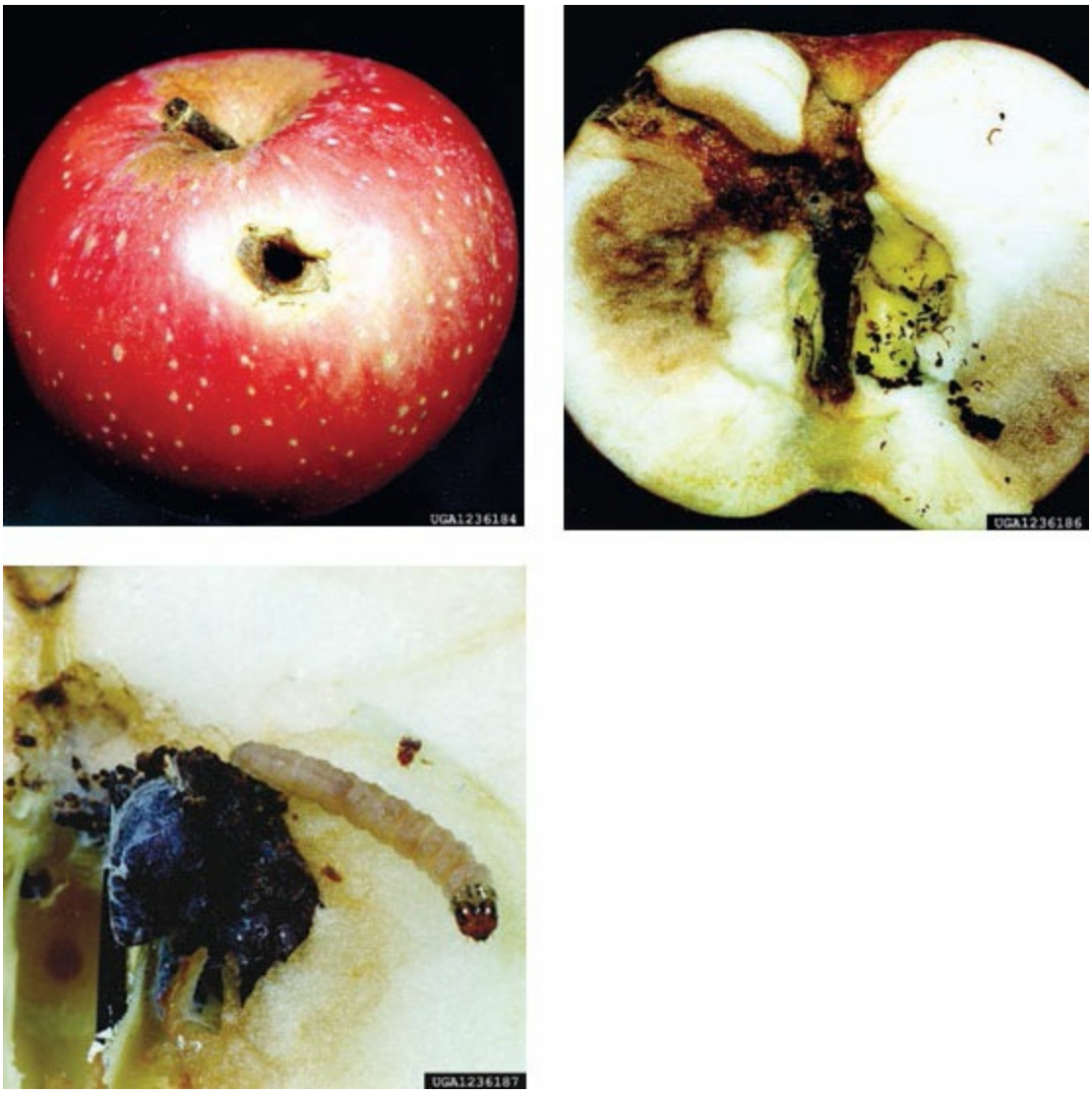

Fig. 49 Codling moth, *Cydia pomonella*, symptoms and larva

Relationship

Compare: *Bomb-pr*., *Valer*., *Vib*.

10.2 Remedies for Aphids and Scale Insects

These insect pests are 1-2 mm/0.04-0.08 inch long in general, although larger species also exist (4-5 mm/0.15-0.3 inch). Different species have different colours, green, blue, pink, deep yellow, lemon-coloured, grey, white or black. Some species have wings. Others have a winged and a wingless stage. When over-crowding occurs, they grow wings, flying to other plants or other parts of the same plant. Near the end of the body two tubes protrude, called cornicles, a feature particular to aphids. Aphids are viviparous, i.e. bearing live young, resulting in possible population explosions.

Aphids pierce and suck, drawing sap from plants, preferably young shoots and buds, the latter producing deformed flowers as a result. Some aphids form galls, attacking the root system as well. Others carry yellow dwarf virus. Aphids are protected by ants and produce honey dew for them.

Population size depends on temperature and nutrient levels. At 15°C (60°F) the females produce three young per day, which increases to six at 25°C (77°F) and with high potassium and/or phosphorus levels this can increase to ten. Hence population explosions occur mostly during warm to very warm weather, when humidity is around 40 to 50%.

Treatment of Crucifers (*Cruciferae/Brassicaceae*)

A. Aphidius spp.

A type of parasitic wasp. Order: *Hymenoptera*. Family: *Braconidae*. Sub-family: *Aphidiidae*. Genus: *Aphidius*. Tincture of the live insect.

General

> *All aphid parasites are Hymenoptera or wasps in the broad sense and belong to two families; the Aphidiidae, which are the most important and are all aphid parasites, and the Aphelinidae, which also parasitise other insects such as scale and whiteflies.*
>
> *The Aphidiidae include many important genera; Aphidius, Praon, Ephedrus, Lysiphlebus, Monoctus and Trioxys. The adults are small, slender wasps with black, brown, orange or yellow colouration.*
>
> (Hussey & Scopes)

While in nature the wasp oviposits the aphid and still takes a few days to hatch, the remedy will act immediately, gaining crucial time to prevent aphid

devastation. For the different instars of the parasitic wasp do not interfere with the development of the aphid. Only at the fourth instar does the predator become active enough to stop the aphid's development and life.
These drawbacks do not exist with the homeopathic potencies, which do not require breeding time, are not influenced by the life cycle of the pest or the weather conditions and are thus applicable at the time the infestation is acute. The immediate response is another feature with which the remedy shows superiority over even IPM.

Clinical

Aphid infestations of all types on nearly all types of plants. *Chrysopa* prefers *Brassicaceae*, but will take aphids from almost any plant. (Fig. 50)

Fig. 50 Russian wheat aphid, *Diuraphis noxia*, imported pest of small grains, infestation

B. Chrysopidae spp.

Chrysopae, *Chrysoperla* and similar species. Green lacewing. Gauzefly. Order: *Neuroptera*. Family: *Chrysopidae*. Trituration of the live adult fly. Tincture of the live insect. (Fig. 51)

Fig. 51 Green lacewing, *Chrysoperla carnea*, larva

General

Aphid infestations on the plant or crop. These lacewings subsist mainly on aphids. They are generally active at dawn and dusk. They can be recognised by their glass-like wings, which contain greenish or yellowish veins.

It can be given at the time of infestation or as a preventative measure, protecting the plant before such infestations occur. It gives protection during the entire life cycle of the plant in annuals and biennials.

While it is true that live insects can be cultivated to do the work, it is often difficult on account of the unpredictability of pest infestations. It is therefore also costly, since the insects may not be available at the moment of need or the breeder of predators does not sell any, since there are no infestations during its own life cycle. Moreover, the adult predator may migrate away from the aphids, even when there are plenty available.

The homeopathic solution presented is the best possible alternative, since neither the life cycle of the predator nor that of the pest continues to play any role in the eradication – the remedy is always available and works at all times, under all circumstances.

With commercially available poisons, control needs 5-6 treatments at intervals of 8-10 days during the entire summer. With the build-up of resistance, this has to be increased to 6-10 treatments at weekly intervals. The costs are astronomical. With IPM, three successive batches of cocoons have to be introduced at intervals of 5 days, at a ratio of 1 cocoon to 25 aphids. The parasite larvae are often incapable of controlling the aphid populations, since these can multiply by a factor of thirty every day in hot and dry

weather. This also requires additional parasites to achieve effective control and makes it rather expensive to use. While control is often very effective, provided the development of aphid and parasite are parallel, there is a risk that a change in weather will often cause population explosions requiring more parasites.
Homeopathic remedies can be applied at all times and prevent reinfestation, even when optimal conditions for it are present. IPM does not prevent reinfestation and will have to be applied again, thus raising the cost for the grower.

Clinical

Aphid infestations. Scale.

C. Syrphid larva

Syrphus and other spp. Hoverflies. Syrphid flies. Flower flies. Gliders. Order: *Diptera*. Family: *Syrphidae*. Tincture of the live insect larva. Trituration of the live insect larva (Fig. 52).

Fig. 52 Hoverfly, syrphid or flower fly, *Syrphidae family*, adult

General

Members of *Syrphus* and similar species have bright markings, often yellow and black, and resemble small wasps, but are not related to them. The carnivorous larvae of some species like aphids almost as much as *Coccinella* larvae do. When the soil is cultivated, the larvae, which survive underground, are promptly killed. During the insect season the use of the remedy is therefore indispensable if the crop is not to succumb to pests.

Clinical

Aphid infestations; also as prophylactic. (Fig. 53, 54)

Fig. 53 Green peach aphid, *Myzus persicae*

Fig. 54 Green peach aphid, *Myzus persicae*

Appearance

Aphid infestations. Plants covered in aphids. When *Syrphus* is sprayed or given directly to the plant, the aphids have either died by the next day or have fled.

Treatment of Cucurbits (*Cucurbitaceae*)

A. Coccinella septempunctata

Ladybird. Ladybug. Ladybeetle. Sunchafer. *Coccinella septempunctata* (seven-spotted species). Order: *Coleoptera*. Family: *Coccinellidae*.

General

Aphids attack grains, fruits, vegetables and flowers.

Coccinella either sprayed directly on the aphid or when given to the plant, rapidly reduce aphid populations.

Fig. 55 *Coccinella septempunctata*, adult

Coccinella has been used extensively with good results, usually requiring only a single dose. Overdosing will attract aphids to a plant, resulting in repeated aphid infestations.

Clinical

Aphids. Scale (Fig. 56). Whitefly (Fig. 57).

Fig. 56 San José or Putnam scale, *Diaspidiotus perniciosus*, adult, on almond

Fig. 57 Silverleaf whitefly, *Bemisia argentifolii*, adult

B. Coccus cacti

Cochineal. *Dactylopius coccus*. Order: *Hemiptera*. Family: *Dactylopiidae*. Trituration of the dried bodies of the female insect.

General

Coc-c., being a soft scale, is specific for treatment of soft scales, because it possesses similar properties. *Shellac* is an example of a remedy for hard scales, as it is a product of a hard scale species (*Kerria lacca*). *Coc-c*. has

been used on different species of scale living on different trees and shrubs. Eucalypt scale (wattle tick, soft brown scale), scale on citrus trees and scale on bottle brush disappeared after a single dose. As with *Cocci-s*., care must be taken not to repeat the remedy.

There are some twenty types of soft scale, all of which can be treated with this remedy. It is the remaining hard scale that must be treated with *Shellac*, approximately ten species. Thus each of these remedies is generic to a certain extent.

Clinical

All soft bodied scale. (Fig. 58, 59)

Fig. 58 San José or Putnam scale, *Diaspidiotus ancylus*, damage

Fig. 59 San José or Putnam scale, *Diaspidiotus ancylus*, infestation

Treatment of Nightshades (*Solanaceae*)

Tropaeolum majus

Nasturtium. *Tropaeolaceae*. Tincture of the seeds/whole plant.

General (see also Chapter 9)

Trop. is a companion plant that has the proven ability to protect other species against different species of aphids, according to Hylton, Grieve and others. Thus a homeopathic dilution ought to be able to confer on plants a type of immunity to aphid infestation.

Clinical

White aphids, squash bugs, whitefly in tomatoes. Nematodes. Mealy bug (Fig. 60).

Fig. 60 Papaya mealybug, *Paracoccus marginatus*, infestation

10.3 Remedies for Beetles

Treatment of Nightshades (*Solanaceae*)

Cantharis

Spanish fly. Cantharides. *Lytta vesicatoria*. (The historical name *Cantharis* is no longer current, since *Cantharis* is a different but related genus.) Order: *Coleoptera*. Family: *Meloidae* (blister beetles). Trituration of live insect.

General

Canth. helps with burns and fire damage to plants. *Epicauta rufidorsum* also belongs to the blister beetle family. If they appear in large numbers, they can strip plants bare. Using Hahnemann's Law of Similars, we might suppose that *Canth*. could help here.

Clinical

Sunburn (see Fig. 61), blisters on leaves and petals. Fertiliser burns, water droplet burns, after bush fires, windburn, sunburn. Bronze orange bug, rust on *Chrysanthemum* and *Pelargonium*. *Epicauta rufidorsum* blister beetles, on potatoes (Fig. 62).

Fig. 61 Sunscald, damage

Fig. 62 Black blister beetle, *Epicauta pensylvanica* (also *pennsylvanica*), adult

Water needs

High. Plant very thirsty. To replace sap lost in fires *(Carb-v.*).

Relationship

Compare: *Bomb-pr*., *Carb-v*.

10.4 Remedies for Whitefly and Flies

General Remedies

Encarsia formosa

A small parasitic wasp. Order: *Hymenopterae*. Family: *Aphelinidae*. Tincture of the live wasp.

Clinical

Greenhouse whitefly (*Trialeurodes vaporariorum*). Silverleaf whitefly (*Bemisia argentifolii*) (Fig. 63). Cabbage whitefly (*Aleyrodes proletella*) and carrot whitefly.

Fig. 63 Silverleaf whitefly, *Bemisia argentifolii*, adult

The greenhouse whitefly (*Trialeurodes vaporariorum*) is known to be a serious pest on over 250 plant species. Among the hosts we may count cucumber and other *Cucurbitaceae*; capsicum, tomato and other *Solanaceae*; and many ornamentals, such as *Azalea*, *Calceolaria*, *Fuchsia, Pelargonium*, *Poinsetta* and *Verbena*.

The life cycle of this insect consists of four main stages: egg, larva, pupa and adult. There are four larval instars (stages between moults). The length of the cycle varies significantly depending on temperature and the type of host species. It can range from 18 to 28 days in total.

The eggs hatch after eight days at a temperature of 21-24°C (70-75°F). When the temperature is lower, the eggs take longer or simply don’t hatch till the temperature is right. A full cycle typically features an 8-day egg incubation,

then four larval instars lasting 6, 2, 3 and 4 days respectively, followed by a 5-day “pupal” stage before the adult hatches.
The newly hatched larvae, called crawlers, are the first instar and initially mobile. They move for a few hours only and then settle. After inserting their mouthparts into the leaf tissue, they lose their functional legs and remain static throughout their further development. During the later instars, the flattened larvae become thicker and the red eyes of the nymph become visible. The so-called pupal stage (not true pupation) is followed by emergence of the adult insect.
Bemisia species can be distinguished from *Trialeurodes vaporariorum* by careful comparison of the various life cycle stages.

10.5 Remedies for Caterpillars

Treatment of Crucifers (*Cruciferae/Brassicaceae*)

Bombyx processiona

Procession caterpillar. Oak processionary moth. *Thaumetopoea processionea*. Order: *Lepidoptera*. Tincture of the live caterpillars.

General

The caterpillars live in colonies at the base of the tree during the day and feed on the foliage at night. After denuding the tree, they walk in a single file - a procession - to the next, hence their name. They produce two generations per year.

Clarke mentions that:

> *… in one case a boy shook a large number of caterpillars from a tree on his bare chest. It caused an itching so severe, that he had to run for assistance. Then fever, somnolency, delirium and finally death ensued.*
>
> (Clarke)

Rodale's periodical relates the case of a commercial peanut and soybean farmer (1976). He prepared a crude product from vegetable loopers. Control was very successful. Another report from 1978 mentioned sawfly larvae being used in a similar fashion.

Bombyx in potency has been used to treat most caterpillars on most crops as a generic remedy. Both as a spray and in the trickle system it is effective. In both cases the plants become immune to caterpillar infestations.

Clinical

Caterpillars, vegetable loopers, sawfly larvae (Fig. 64), army worms, cabbage moths and other caterpillars.

Fig. 64 Sawfly

Relationship

Compare: *Canth*., *Samb*., *Valer*., *Vib*.

Treatment of Pulses (*Leguminosae/Fabaceae*)

Camphora

Camphor. Gum obtained from *Laurus camphora = Cinnamonium camphora. Lauraceae*. Solution in rectified spirit.

General

Camphor is a white crystalline substance, with the chemical formula $C_{10}H_{16}O$. It is found in a range of plants and can also be manufactured synthetically. The homeopathic remedy is prepared from gum of the *C. camphora* tree which grows in South-East Asia and Australia. It is found either in longitudinal cavities in the heart of the tree or extracted from the leaves and twigs. There are also significant quantities in rosemary and African blue basil.

Grieve's herbal mentions that:

> *It is a well known preventive against moths and other insects, such as worms in wood; natural history cabinets are often made of it, the wood of the tree being occasionally imported to make cabinets for entomologists.*
>
> (Grieve)

As *Camph*. is a powerful remedy, it should be used with caution, because of the severe reactions it produces. It is often prescribed in the lower potencies,

> *… but those whose knowledge of Camphor is confined to its coarser*

action will never understand what a great remedy it is when used according to its fine symptomatic indications and given in the higher potencies.

(Clarke)

Because of its wide range of symptoms and the overlapping of primary and secondary reactions in humans, it is difficult to use there. In plants it produces enough symptoms to warrant its use in lodging, especially if caused by waterlogging, as *Camph*. is indicated for diseases arising from cold and damp weather.

The roots feel slimy, the slime being viscid, something not found on healthy roots. The plant is excessively thirsty.

The capillary system does not work properly, thus interfering with the transport of sugars to the roots and the uptake of nutrients into the plant. Respiration and photosynthesis are consequently defective and the plant slowly withers and collapses.

Clinical

Moths, wood worms, white ants and other pests. Lodging, negative effects of waterlogging. Cockroaches, ants. (Fig. 65)

Fig. 65 Fire ant, *Solenopsis geminata*, damage

Termites

Termites (Fig. 66) belong in the same order as cockroaches (*Blattaria*) and not in that of the ants, as their common name, the white ant, would suggest. They live in colonies which have a king as well as a queen, unlike all other colony dwellers such as ants and bees. The population is composed of workers, soldiers and other castes. The soldiers have large heads and strong

jaws particularly to defend against ant attack. Some confront the invaders, while others scurry deep into the nest to defend the inner levels, especially in the subterranean species.

Fig. 66 Termites

Most species are 4-10 mm/0.15-0.4 inch long, white or cream-coloured and soft-bodied. Depending on the species, the nest is constructed either underground, in trees or in mounds. Most species attack either living or dead wood, which is the reason why many wooden houses or the stumps on which they are built are a target for the termites.

Some species feed on fungi, which they grow in underground tunnels, while still others feed on turf, field crops and other vegetation, chewing the roots. In spring they may swarm; males and females on the wing emerge in massive numbers from the nest, like ants. These mates drop their wings and set up a new nest as a royal couple. From the eggs the workers emerge, and these build a new nest. In two to three years the egg production speeds up with more egg-laying females. Some queens become too large to move and only lay eggs; some species manage up to 4,000 eggs in 24 hours.

In Australia they may attack a large range of trees, mainly eucalpyts, along with some others. The reduction of native forests has brought them to human dwellings. *Camph*. is a good remedy against the termite. In its crude form it has been of service for hundreds of years. The camphor tree, *Cinnamomum camphora*, with its strong smell due to camphor, will remain free of termites. It is clearly not only the smell that makes *Camph*. an excellent remedy against the termite. In the potencies it works just as well, while in such fine dilutions there is apparently little or no question of any smell. On the other

hand, pheromones can be much subtler than our noses can smell. When we consider that dogs can smell 100,000 times better than us, it is quite conceivable that insects have still finer senses.
Camphor is believed to act as an insect repellent, and termites are perhaps sensitive to its action. It causes prostration and debility in humans, which would certainly also be an unwanted phenomenon in a termite nest. There is constant work to do with the eggs, the larvae and the food reserves, as well as many other tasks. A sleepy and debilitated state can be the death of the nest. *Camph*. has been used with good results on timber stock against termites. *Camph*. is also effective against moths.

10.6 Remedies for Nematodes and other Worms

Treatment of Roses (*Rosaceae*)

Tanacetum vulgare

Tansy. Family: *Compositae/Asteraceae*. Tincture of whole flowering plant.

General

Grows on rough ground and pastures.

Tanacetum oil contains toxic ingredients such as thujone and camphor that explain its camphorous odour, its historical uses and associated hazards, including abortion, convulsions and death. It was a traditional vermifuge to kill and expel worms in humans, cattle and sheep.

Clarke cites the symptom similarity with rabies and its prophylactic use by a French homeopath, Peyraud.

Herbals such as Grieve (1931) and Hylton (1974) and modern researchers suggest that tansy repels flies, Japanese beetles, ants and other insects.

In potency it is taken up by the plant and so confers immunity against some pests. Especially useful to keep ants away from plants infested with aphids, as ladybug larvae cannot feed as easily on aphids protected by ants.

Clinical

Flies, worms of any type, Japanese beetles, ants, moths, fleas. Convulsions. Rabies (according to Peyraud, cited in Clarke). Nematodes (Fig. 67, 68). Peach is most affected by *Tanac*. Premature fruit drop.

Fig. 67 Wheat seed-gall nematode, *Anguina tritici*

Fig. 68 Foliar nematode, *Subanguina chilensis*, foliage

Treatment of Mints (*Labiatae/Lamiaceae*)

Teucrium marum

Cat thyme. *Marum verum*. *Labiatae/Lamiaceae*. Tincture of whole fresh plant.

General

There is no better remedy for cases of nematodes than *Teucr*. Nematodes inhibit plant growth and impede respiration, especially the root-knot nematode (*Meloidogyne* spp.). In potato tubers the whole of the tuber becomes lumpy. Other remedies like *Calen*. can also be used for nematode control.

From the symptoms listed in the materia medica, inferences can be drawn with regard to nutrient levels – the symptoms of both nematodes and *Teucr*. are identical.

In companion planting, the species of *Teucr*. are not as effective as *Ruta*, but in potency they do confer immunity to pests on plants. All species of thyme have this capacity, as do the *Thymus* varieties.

Various herbals (Grieve, 1931; Hylton, 1974) mention the active properties of cat thyme and it also features in companion planting books for roses (Hemphill, 1990; Philbrick and Gregg, 1966).

Many tests must still be conducted to establish the full range of *Teucr*. preparations.

Clinical

Thread worm. Cabbage root fly. Moths. Nematodes. Mastitis in cows. Flowering and fruit- setting problems.

Relationship

Compare: *Mentha*

10.7 Remedies for Mites

Treatment of Crucifers (*Cruceiferae/Brassicaceae*)

A. Amblyseius spp. cucumeris/californicus/mackenzie

Predatory mite. Class: *Arachnida*, Subclass: *Acari* (mites and ticks). Tincture of the live mite. Trituration of the live mite.

General

Evidently, we have sought to expand the range of remedies to combat pests. We were naturally curious to see if there were other possibilities of using predators, as already seen from the first edition of this book, where *Cocci-s.* was the first remedy made from a predator. By carefully studying the literature on the use of Integrated Pest Management, we reasoned there would be many possible remedies against pests. Many of the remedies presented here have been inspired by this literature. Additionally, we obtained the necessary insects from companies that rear them to produce these remedies and tested them in the field. They performed beyond expectations and are presented here as remedies of the first order in the protection of plants against pests.

Mites pose a problem for the grower in that they infest plants, where they weave a fine webbing around the branches and leaves, shutting them off from oxygen and carbon dioxide, effectively strangling and suffocating the plant. They migrate by attaching themselves to other insects, which transport them to a new location. Many scientists maintain that they are parasites of the insect on which they are found, but this is an incorrect notion. *Trombidium* is one such example. Predatory mites which feed on pest mite species also migrate as adults, which makes it difficult to determine how many predator mites are needed at what stage for pest control. They also swarm and migrate in the same manner, making it equally difficult to determine the numbers of predator mites for an infestation of red-legged earth mites or any of the other varieties of mite. The numbers may fluctuate due to the arrival of more mites or the departure of mites in search of newer hunting grounds.

Used in remedy form, no such considerations need to bother the grower, since it is always available and a single dose is enough to protect the plant or crop for the duration of its annual or biennial existence. Homeopathy has so many advantages over any other method that there is actually no comparison. The diverse species of *Amblyseius* are equally effective. Each of the

subspecies can be used for the control of mites in the crop, regardless of whether these crops are grown outside or in the greenhouse.

Clinical

Mites. Red-legged earth mite, spider mite (Fig. 69), russet mite, rust mite, blister mite, two-spotted mite.

Fig. 69 Spider mites, damage

B. Bovista

Warted puffball. *Lycoperdon bovista*. Kingdom: *Fungi*. Trituration of the fresh fungus.

General

> *This globular fungus, which, according to report, is eaten in Italy before it is ripe, becomes filled, while ripening, with a blackish dust that breaks the husk which contains it, with a slight noise.*
>
> (Clarke)

The signature points to bloatedness, puffiness and enlargement. Ovarian problems in flowers. Moist and dry rots in many plants. Root rots with putrid smell. Plants are thirsty, especially in the afternoon and evening.

Bov. was tried for fairyring spot on turf, which proved to be a failure. In the process its action on the spider mite was a welcome and happy result. Naturally, it was quite a surprise and it has puzzled me no end to discover what it was in the puffball that stopped the mites. Careful investigation of the latest developments in pest control gave me a clue.

In IPM the use of fungi to combat pests has provided us with a range of remedies that will be effective against several pests. *Bov*. belongs in the natural kingdom order of *Fungi* and its action on the spider mite and other

mites is probably due to a similar mechanism to the fungi used in IPM. It remains to be confirmed or refuted by microscopic evidence.
The spider mite can just be seen by the naked eye, mainly because of its contrasting colour. The females are present in greater numbers. They are harder to spot because they are pale green. In winter the females turn orange red, but hide under the bark, in the junction of branches or at the base of the plants. In spring they feed on the young shoots or seedlings, turn green again and move back up the plant.
Bean debris harbours those that overwinter. In hot, dry weather they do the most damage. Heavy rain reduces their numbers. The damage is visible as chlorosis, drying out and becoming brittle. Leaves turn grey.

Clinical

Spider mite and other mites (Fig. 70). Ovarian problems, such as deformation, capillary relaxation. Moist and dry rots. Moulds.

Fig. 70 Spider mites, infestation

C. Ricinus communis

Castor oil plant. *Palma christi*. *Euphorbiaceae*. Tincture or trituration of fresh seeds or fresh plant.

General (see also Chapter 9)

This widespread plant, found throughout the tropics and subtropics, is probably an African native. It is effective as a companion plant for grapevines, helping to combat pests that attack the vines.

Clinical

Pests in viticulture: vine mite, rust mite, grapevine moth, hawk moth, scale (Fig. 71). Pests in *Cucurbitaceae*. Worms.

Fig. 71 European fruit lecanium scale insect, *Parthenolecanium corni*, infestation on blueberry

D. Trombidium muscae domesticae

Red velvet mite. Class *Arachnida*. Subclass: *Acari* (mites and ticks). Family *Trombidiidae*. Tincture of the live mite.

Carriers: housefly, stable fly, blow fly and other insects.

General

J. H. Clarke mentions this remedy in his *Dictionary of Practical Materia Medica*, where he gives the following description of the tiny creature (an arachnid rather than an insect) proved under Hering's supervision:

> *Trombidium is a parasite found singly or in groups upon the common house-fly, of a bright red colour, nearly circular in shape. The alcoholic tincture, a brilliant orange in colour, was prepared from specimens, about 115 in number, collected in Frankfort, Philadelphia in September, 1864.*
>
> (Clarke, J.H.)

The exact *Trombidium* species used for the proving is unknown; the name *muscae domesticae* is not a scientific name, but simply means "of the housefly". The common name of red velvet mite is often used for members of this genus.

Although Clarke, along with many other writers, including those with entomological knowledge, describes this type of mite as parasitical, other researchers believe many mite species are simply hitch-hikers and do not

make other demands on their ride.
Other types of mite may also attach themselves to larger hosts including flies, for example:

The Tarsonemus mite, which swarms by attaching itself to the fly.

(Hussey)

A *Tarsonemus* mite breeds in compost and manure and feeds on mycelium of different species of fungi found in manures mixed with straw. It also attacks the mycelium of developing spores of edible mushrooms and is a serious pest among mushroom growers worldwide.
Another common agricultural pest is the red spider mite (*Tetranychus* spp.).
The grand keynote of *Trom*. is worse from nutrients and watering. Any plant suffering from a pest or disease that gets worse from the application of fertiliser or water will improve under *Trom*. Blotches and patches, more prevalent on hairy leaves.
Roots may have mould and poor assimilation of nutrients. The capillaries seem congested. Leaves, especially in hairy species, may show spots. Respiration, photosynthesis, and evaporation are all disturbed. From extensive tests by the USDA, it has been observed that plants with excess potassium and phosphorus are more prone to aphid and mite attack, while pest numbers increase more rapidly on overfed plants.

Relationship

Compare: *Bov*.

10.8 Remedies for Snails and Slugs

Fig. 72 Every gardener’s worst nightmare

Snails and slugs are members of the class *Gastropoda* within the *Mollusca* phylum. The gastropods are one of the most diverse groups of animals in form, behaviour and habitat, and second only to insects in terms of the number of species. They live in the deep oceans, shallow coastal seas, and in fresh water, and are the only molluscs to have colonied the land. They range from microscopic types to large specimens such as the giant African land snail *Achatina fulica*, which grows to about 20 cm in length and can weigh up to 700 grams.

Gastropods which have lost their shell, or have only a very reduced or internal shell, are usually referred to as slugs, being otherwise indistinguishable from snails. This adaptation, which allows the creature to squeeze into tight spaces and increases manoeuvrability, has occurred independently among many different lineages, so that the various slug families are often not closely related to one another. When attacked, slugs contract to become harder and more compact.

Fig. 73 Achatina fulica

The soft bodies of snails and especially slugs are prone to dessication, so they hide in damp places such as under rocks, logs and plant pots during drier conditions. Some types hibernate underground during winter in temperate zones, while in others, adults die off in autumn. Thin mucus on the skin makes them slippery and unpleasant-tasting, as well as helping reduce moisture loss, while thicker mucus secreted from the underside increases grip and lubrication, protects the muscular foot from damage and sends chemical messages to other individuals.

Their bodies appear bilaterally symmetrical externally, like their bivalve counterparts, but they have asymmetrical internal features and shells. They can retract their upper light-sensing tentacles and lower smell-sensing feelers. Most garden types are simultaneous hermaphrodites, each individual having both male and female sexual organs. Although they are capable of producing both sperm and ova, self-fertilisation is rare. Reproductive behaviour depends on the relative size of the animals. Creatures of similar size in a mating pair can simultaneously transfer gametes to each other (bilateral mating). Where the two differ in size, one-way transfer of sperm occurs from the smaller male, with the larger individual acting as a female.

Although aquatic and terrestrial snails are sometimes farmed as a protein source, slugs and snails mainly impact on agriculture and horticulture as a major pest, leaving tell-tale silvery trails on their nocturnal rampages. Plant-eating types destroy crops by eating roots, leaves, stems and fruits. They are particularly partial to young shoots and seedlings and are able to consume a large variety and quantity of vegetation, using the minute teeth of their movable, abrasive radula to scrape or cut their food.

Fig. 74 Slugs and slug damage

They can wreak havoc in the greenhouse as well as the garden. They can be

kept out of the greenhouse if a border free from grass and plants is created between the walls and the rest of the garden. Pots should be stored away from any vegetation, since these pests will use them as shelter during the day and lay countless eggs on their inside and outside surfaces. In the garden, people try almost everything, from keeping geese (an excellent solution in itself, since geese do not eat cultivated plants) to dishes of beer, salt or vinegar. While many of these measures can be effective, they have to be repeated constantly and do not offer permanent protection. Resorting to toxic pellets introduces nasty contaminants and impacts on the food chain when poisoned snails are eaten by other animals and birds.

During dry and cold weather, as well as in daylight hours, in both sunny and overcast conditions, snails and slugs will hide under cardboard, stones, old leaf litter, and other debris in the garden. One way to reduce their numbers is to keep the garden free of such detritus. One can also use a piece of cardboard as a trap in otherwise clear gardens.

However, snails and slugs do have a function that can be used to the gardener's advantage. If deprived of cultivated plants, they will consume weeds, and so they can be put to useful work.

Treatment of All Plant Types

Land snails are plagued by many natural predators, including other gastropods such as decollate snails, ground beetles, leeches, birds and toads, among others. Indian loaches of the *Botia* genus of freshwater fish also feed on aquatic snails by sucking them out of their shells.

Humans also pose great dangers to snails in the wild. Pollution and the destruction of habitats have caused the extinction of a number of snail species in recent years.

The remedies described below included potentised preparations made from the common garden snail itself (*Helix tosta*), its predator the decollate snail (*Rumina decollata*), two snail parasites (*Hyposmocoma molluscivora* and *Leucochloridium paradoxum*) and two plant remedies (*Absinthium* and *Quassia*). Of these, the most effective and important remains *Helix tosta*, perhaps because it has been so widely used. The remedy *Bufo*, described in the section on General Insect Remedies, may also be useful against snails and slugs.

Fig. 75 Helix pomatia

A. Helix tosta

Toasted snail. *Helix tosta*. Prepared from species such as *Helix pomatia* and *Helix aspera*. Class: *Gastropoda*. Family: *Helicidae*. Trituration of toasted shells.

General

As a gastropod, the snail literally ‘walks with its stomach’ over plants. A single animal can consume an entire outer cabbage leaf in only a few hours and this common pest causes untold damage for gardeners, vegetable growers and farmers. The trail of slime dissolves the plant tissue, which is scraped by millions of tiny teeth, and passes into its digestive system, where it is digested further. There is a clear analogy here with the traditional use of snails as a treatment for consumption (TB).

Homeopaths have put the remedy to the test by potentising it, and extensive clinical trials in herb farms and private gardens have shown that applying *Helix* 6X to plants by spraying or watering protects them from snail attack. Protection is such that snails will pass previously sprayed plants to eat untreated plants instead. No other preparation continues to work four months after a single dose, even in heavy rain. When sprayed on a plant infested with snails, it destroys the animals’ shells, making them soft and slimy. On account of their similar characteristics and appearance, slimy moulds should also come under its action, but this has not yet been verified.

Helix does not affect the small native Australian snail, but only imported species such as the so-called Italian snail as well as slugs. In Australia, the native species often do not eat plants, but consume rock instead. We have seen many different rock-eating types in the outback, leaving clear grooves where they have eaten away material. While a homeopathic remedy made

from these native types could send them packing, since they do not bother us, we shall simply let them be.

Clinical

Snails, slugs and possibly slimy moulds.

B. Rumina decollata

Decollate snail. Order: *Gastropoda*. Trituration of the toasted shells.

General

Rumina decollata or the decollate snail is a predator of other snails and slugs. The animal grinds away the tail end of its shell by rubbing against a hard surface once it reaches its full size of around 40 mm in length, hence the name ‘decollate’, meaning ‘beheaded’. Native to the Mediterranean, it has been imported worldwide to help control snail populations. A voracious eater, its diet includes plants, but it particularly targets common garden snails in Europe, consuming both adults and snail eggs, which it digs up from the soil. However, it also eats harmless snails and beneficial annelids including earthworms. Although it prefers damp weather, breeding rapidly in these conditions, it can tolerate drier, cold periods by burrowing deep underground. It is mainly nocturnal and most active when it rains.

It is, however, difficult to establish it in a new environment and it may take a few years before it controls snail pests effectively. As a remedy in homeopathic potency, none of the less desirable qualities are present and it works more efficiently in controlling snail populations. The remedy has no effect on earthworms and this feature makes it especially attractive. It takes effect immediately and is not dependent on time or circumstances. Since the snails are not killed by the remedy, they can moreover be useful in eating the weeds in the garden, since cultivated plants become unpalatable after being treated with *Rumina*.

Clinical

Snails and slugs.

Fig. 76 The truncated shell of the predatory decollate snail, *Rumina decollata*

C. Hyposmocoma molluscivora

Predatory larva of a Hawaiian moth. Order: *Lepidoptera*. Trituration of the live caterpillar. Tincture of the live caterpillar.

Only a tiny minority of moth and butterfly species, less than 0.2%, have predatory larvae and this species, naturally occurring only on the islands of Hawaii, is one of four types known to eat snails.

The caterpillar is around 0.75 cm (3/10 inch) in length. When it comes across a slow-moving snail, it moves in quickly to wrap a mesh of silk threads around the prey, binding it fast. Once ensnared, the victim is devoured in stages. Empty shells are often added to the silk case which the caterpillar carries around for protection while awaiting its next meal.

In its native habitat it targets very small Pacific snails of the *Tornatellides* genus. Our small-scale trials of this remedy in homeopathic potency have yielded promising results against garden snails generally.

Clinical

Snails and slugs.

D. Leucochloridium paradoxum

Green-banded broodsac. Parasitic flatworm. Class: *Trematoda*. Trituration of the live flatworm. Tincture of the live flatworm.

General

A small European amber marsh snail, *Succinea putris*, is host to a parasitic flatworm, *Leucochloridium paradoxum*, which invades the animal's eye-stalk, making it an easier target for the birds which are the parasite's final host.

When a small, motile flatworm in its first larval stage enters the body of the snail through its mouth, it first settles in the innards as a sporocyst. Then it transforms into long tubes full of second-stage larvae which eat through the body of the snail to reach its eye-stalk. They prefer the left tentacle if available. In an ingenious example of aggressive mimicry, the larvae pulsate with colour in the presence of light, resembling a tasty, moving caterpillar. Since the eye-stalk swells and can no longer be retracted, this also makes the snail more conspicuous to predators.

These characteristics make *Leucochloridium* a prominent anti-snail remedy. Snails detect the energy imprint of a dangerous enemy against which they have no defence. They seek to avoid it at all costs, recognising it by sight, smell or energy pattern.

Fig. 77 Amber snail with left eye-stalk invaded by parasitic *Leucochloridium paradoxum* larvae

It is perhaps the place here to enter somewhat deeper into the concept of energy patterns. At the dilution rates homeopathy uses, no molecular substance remains behind. In the Introduction we have presented the nanophase theory of potency, which liberates the innate consciousness of the substances so processed. The energy pattern is a reflection of this consciousness. This consciousness is passed on to the plant when the remedy is absorbed and so the plant emits a mixture of its own and the flatworm's signatures. Any snail approaching the plant will be confronted with the flatworm danger and immediately change direction.

Clinical

Snails and slugs.

E. Absinthium

Common or absinthe wormwood. *Artemisia absinthium*. Family: *Compositae/Asteraceae*.

General

Since ancient times wormwood has been used as a remedy to keep snails and slugs off cultivated plants such as vegetables and flowers. To this end the plant was dried and applied as a powder, sprinkled around the plants to be protected. Today, we use the remedy in a homeopathic potency with equal success.

Clinical

Snails and slugs.

F. Quassia

Quassia wood. Bitterwood. *Quassia amara* and similar species. Order: *Sapindales/Rutales*. Family: *Simaroubaceae*. Trituration of the extract.

General

Quassia amara was originally native to South America, but now grows widely throughout the tropics including Africa, Australia and Asia. A range of trees with similar properties and names sometimes included in the *Quassia* genus are now often placed in related genera within the same family. These include:

Quassia (Simaba) africana
Quassia (Simaba) cedron
Quassia (Picrasma) excelsa
Quassia (Samadera) indica
Quassia (Simaba) undulata
Simarouba amara

The bark of this tree contains the white crystalline alkaloid quassin. With a bitterness threshold of only 0.08 ppm, this is 50 times more bitter than quinine, making it one of the bitterest substances in nature. This may account for much of its effectiveness in repelling or killing insects as well as slugs and snails. It has been used in organic agriculture and is part of a commercial brew made by companies supplying the organic market. An extract is sold under the name of Fertosan in the USA. These products still have the aim of destroying pests, ultimately a self-defeating exercise, since by killing one, the user will invite several hundred to the funeral.

In the homeopathic view of agriculture, we take the more sensible approach of considering the pest or disease to be but one of the symptoms indicating the type of stress our plants are under. Since the plant is having the problem, it is the plant that needs the treatment. Chasing the bug or pest is a wild goose chase, which will invariably end in defeat.

Clinical

Snails and slugs.

Fig. 78 Helix aspersa

11. Bacterial, Viral and Fungal Diseases

Bacteria, fungi and viruses are the most common plant pathogens. With the possible exception of fungi, they are not responsible for diseases, as we understand them in homeopathy. Rather, the situation in which we grow plants is the sole indicator for disease emergence. Hence what we put in the ground and how we treat plants has an important bearing on disease susceptibility. The common view on these so-called pathogens follows the same pattern as in humans.

A. Nutrition and Fertilisers and Organic Practices

"I wish I could draw a clear-cut, one-solution picture of plant diseases; if only organocultists (those who believe only in organic gardening) were right and all soil-borne diseases of plants – caused by bacteria, viruses and fungi – could be eliminated simply by not using chemical (inorganic) fertilisers. Unfortunately, the answer is not that simple."

The author of that quote is R. Milton Carleton whose book on Soil was published in 1961. It is recommended reading for all organic farmers. In it he discusses that feeding practices do have effects on diseases, sometimes causing them, sometimes preventing them. For example, an application of manure on a poor soil might protect against a condition of wilt by supplying nitrogen and potash, yet the same application on nitrogen-rich soil might trigger wilt.

It is well known that potato scab, a soil-borne disease, is most severe in alkaline soil. It can be prevented by the use of fertilisers and soil treatments to lower pH so the scab organism cannot grow. The reverse is true in some cases. For example, wilt and club root diseases in cabbage is worse in acid soil. The use of alkaline materials helps control these diseases. *(For a more complete discussion of diseases, see "Plant Disease Handbook" by Cynthia Westcott, published by D. Van Nostrand Co.)*

In many diseases, the cause is found to be an imbalance in nutrition. It may be too much nitrogen with too little phosphorus or too little of all the elements. Organic fertilisers show better response because it is more complete and contains elements often missing from chemical plant foods. Gardener's loam, with its complete supply of every element, is often the best

antidote to many plant diseases.

So the source of confusion is not so much due to differing responses to organic and chemical fertilisers but to the soil on which the plants were grown. To the orthodox thinker, soil is a medium to suspend nutrients. Nutrients are only important as plant foods and so these are always fed, making for very one-sided nutrition. When it is discovered that a micronutrient is involved, too much or too little is often given at first, or in the wrong form, which exacerbates the problem.

"Many garden experts talk about fall cleanup in much the same way that a dentist tells you to brush your teeth three times a day. He knows you won't take time to do so, but he's done his duty. This cleanup recommendation has been echoed and re-echoed until it has lost most of its effect. In the past I have neglected fall cleanup and four years out of five it made little difference in the amount of disease in my garden. In the fifth year, however, I was usually punished for my negligence, doubled and redoubled.

The fact is that except for surface diseases which are carried by insects, such as aster yellows and virus diseases of some plants (carried by aphids and leaf hoppers from sources of infection outside your property), sanitation can prevent disease. The fall cleanup must not, however, be a perfunctory ritual. It calls for cutting off every standing plant about a quarter of an inch above the surface, removing a spoonful of soil as well as the stems. This is tossed in a waiting wheelbarrow.

Fall is a good time to start new compost piles, "seeding" each new pile with bacteria-rich leftover material from an old pile. This old compost forms the foundation on which fresh garden debris is laid to form the first layer of the pile, unless the autumn leaf crop has already been added. Be sure that any plant wastes that might contain disease spores or insect eggs are buried deeply in the pile: they should not be closer than 12 inches to any exposed surface, for they must be subjected to the heat of fermentation. Add a good mixed fertiliser as well as some extra sugar or starch if possible (a good place to dispose of spoiled jellies, jams, wormy flour, and so on).

There are a number of soil-borne diseases caused by specific organisms that can survive for years in the garden. But they are not

likely to attack plants well grown in gardener's loam in a plot open to sun and air circulation."

(Carleton, Your Garden Soil: How to Make the Most of It, 1961)

However, the habit of leaving some plant debris in the garden to be processed directly into the soil does not always pose more risk to the crop; on the contrary, it protects it from attack by fungi, now too busy processing plant debris and humus, compost and old manure.

B. Germ theory

While some viral diseases such as barley yellow dwarf may come from outside the property, it must be borne in mind that the conditions in which crops grow are more responsible than the aphid vectoring a virus. For no virus can become active before the diseased state demands its appearance. Here homeopathy supports the "soil" theory, arguing that the host organism holds the key to disease rather than the microorganism, "germ" or "seed". Within conventional medicine, germ theory places prime importance on viruses, bacteria and other microbes. Its practitioners hold the proposition that microscopic entities called microbes have sufficient power to make us sick and furthermore declare these creatures can kill us and are, therefore, exceedingly dangerous and must be killed.

With the exception of occupational illnesses, wider environmental factors are typically neglected, along with the social, cultural and psychological aspects of the individual patient's experience. Iatrogenesis is often overlooked. There is heavy reliance on numerical readings from microscopic test slides to quantify the disease culprits.

Let us look at the theory, that germs cause disease, a little more closely. Proponents argue that when bacteria or viruses are killed the disease is soon gone as well.

The viruses become active from some outside trigger – generally an invasion by and of those same germs. They attack the living cells and destroy them, in the process using the cell DNA to multiply. A virus is really nothing more than a string of mRNA cells, which need another cell's DNA to complete them and divide. If this is allowed to continue unabated, the body will succumb under the onslaught and die.

This is the orthodox view, which has dominated medicine since introduced by Pasteur and others in the 19th century. It has been adopted in modern agriculture. However, Pasteur's theory was hotly disputed during his lifetime

and he himself is reputed to have conceded on his death-bed that: “It is the soil, not the seed.” We will scrutinise some of the assumptions Pasteur made in order to discover whether or not they fit the facts. The first is the assumption that germs cause disease.

Cause and result the same?

When a disease is full-blown, what is the picture of the blood?

A patient suffering from a severe case of (so-called) viral, bacterial or similar disease will invariably have a high load of the respective microorganisms in their blood. By contrast, if we examine the blood of any healthy person (or the sap of a plant), we may find the microbe is present in some cases, but never in disproportionate amounts. In the sick, everyone has a very high count. When normally it may be one per million, in disease it is one or two per three cells.

It is important to consider carefully what we observe. In a full-blown case of disease we are looking at the disease ultimate. It is an end result.

Hahnemann’s theories of disease predated modern germ theory.

> *Disease is not to be considered as an inwardly hidden* wesen *separate from the living whole, from the organism and its enlivening* dynamis, *even if it is thought to be very subtle. Such an absurdity could only arise in brains of a materialistic stamp.*
>
> (Organon § 13)
>
> *A natural disease is never to be regarded as some noxious matter situated somewhere inside or outside the person.*
>
> (Organon § 148)

Hahnemann gives a clear definition of disease:

> *The unprejudiced observer … perceives nothing in each single case of disease other than the alterations in the condition of the body and the soul, disease signs, befallments, symptoms which are outwardly discernible through the senses. …*
>
> *[He] only perceives the deviations … which are felt by the patient himself, perceived by those around him, and observed by the physician. All these perceptible signs represent the disease in its entire extent.*
>
> (Organon § 6)

Hence disease is nothing but a change in health of the mind and body, notable by signs and symptoms (restricted to physical signs and symptoms in plants). This is the long and short of every disease, whether caused by drugs or

natural dynamic means.

> *Only the life principle, mistuned to such abnormality, can impart to the organism the adverse sensations and … irregular functions that we call disease. The life principle is a power-wesen invisible in itself, only discernible by its effects on the organism. … The morbid mistunement of the life principle makes itself discernible by disease symptoms; in no other way can it make itself known.*
>
> (Organon § 11)

Hahnemann did not believe in the microbe as the cause of disease. He firmly established that the entire disease can be known by the changed sensations of the patient and by observable changes in the physical frame. He did not see a need for invasive techniques to trace the disease in the interior. He even considered lab reports unnecessary, except from normal secretions, such as urine, stool and menstrual blood.

He believed disease is a change in health and is cured by a remedial agent capable of producing such a disease in the healthy. A virus in his day was nothing but a poison – the virus of the cobra for instance. Jenner did his first experiments with the pox vaccine in Hahnemann's time and the bacilli, bacteria and other germs were becoming increasingly known and were equally increasingly considered the most important signs of a disease. Yet for Hahnemann this did not tally with his contention that disease and cure are both dynamic processes.

Modern medicine does not often consider the dynamics of either disease or medicinal action. The germs and viruses keep on multiplying as long as the disease lasts, until death follows: so says the theory. In addition, since death is the final result as they say, we must conclude that abundance of viruses or other germs is also an end-result. How then can they be the cause?

> *In effect, only the fungi can cause disease, since they live in the soil and their function is decomposition. In the bare soil of the modern farm, there is nothing to decompose but the living crop. Therefore, the fungi will attack the living plants, to secure their own survival.*
>
> (Kaviraj V.D. AIDS – Antibiotic-Induced Deficiency Syndrome)

C. Fungi

Fungi are the largest group of plant pathogens. They are sometimes thought of as plants that lack chlorophyll; in fact they are not plants but rather organisms in their own kingdom. Fungi obtain food from other living

organisms or from decaying organic matter. They produce microscopic spores that can be compared to the seeds of higher plants. The spores develop into threads (hyphae), which grow and branch into mycelia or other specialised structures (fruiting bodies).
Fungi enter plants through wounds, natural openings or by direct penetration through the surface of the plant. The fungal mycelium grows through the plant and eventually produces more spores. These spores can then spread the disease to other susceptible plants. Some fungi have complicated life cycles which require more than one type of spore and/or more than one type of host plant to complete the life cycle.
Fungi are spread by airborne spores (wind currents), soil, water (in irrigation water or rain splashes), seed or vectors. Vectors are agents that transmit diseases from one plant to another. Examples of vectors are: man, other animals, insects, tools, other microorganisms (fungi, nematodes, etc.) and so on.
Fungi, which are usually visible to the naked eye, cause rust, spots, mildew and damping-off. All of these are generally encouraged by moisture, warmth, and humidity. (Fig. 79)

Fig. 79 Coffee leaf rust, *Hemileia vastatrix*

D. Summary

We not only advocate avoidance of chemical fertilisers, but their replacement with proper compost or a biodynamic preparation such as B-500. We do not advocate the use of chemical sprays, regardless of their other “advantages”, except perhaps in a homeopathic potency, suitable for the case at hand.
The contention that chemical fertilisers impoverish the soil is borne out by

facts. Poor soil contains fungi, which really belong in the soil to break down organic matter. When these are not fed their normal diet, they will attack the living plants. Nowhere in nature do we find entire populations attacked by fungi, except when man has interfered.
Dieback, for example, in Western Australia and elsewhere is the result of removing so many trees that the fungus does not have enough to eat and will attack the remaining stands of trees. These stands are too small to maintain themselves and they succumb under the onslaught of many fungi, which in the past had enormous amounts of dead plant material to feed on. Robbed of their usual food source, they will need to feed on the living trees, simply to guarantee their own survival.
The solution proposed by orthodox opinion is the planting of as many trees as possible: this is the opposite of what needs to be done. The argument is that the fungus must be killed first and not fed more, lest it multiply too rapidly. However, sufficient trees will produce sufficient debris and the fungus will happily leave the trees alone. When fed sufficiently, why would the fungus go elsewhere?
Attacking living plants is more difficult than eating their debris. Plants have their own defence mechanism, of which salicylic acid is but one component. Hence the solution is to fool nature into believing that everything is following the lines of proper spacing and mixed cultivars, giving the impression that no monoculture exists in that place.
Let us now turn to some happier solutions that advocate balance in nature, to see what these have to offer.

Treatment of Asters, Daisies, Sunflowers (*Asteraceae/Compositae*)

Ferrum sulphuricum

Sulphate of iron. $FeSO_4$. Trituration of freshly prepared crystals or solution.

General

Ferr-s. corresponds, like *Calc.*, *Calc-f.* and Nat- *sil-f.*, to the condition of cancer in trees. Nutrients are not taken up. It may be suited to removing mercury from plants or modifying mercury uptake in plants. All symptoms are worse in summer, on warm days, at night and in the morning. Afternoons generally give the best appearance.
The roots may appear discoloured, red, or have bright red papular eruptions. Swelling of parts of the roots. There is a dry feeling under the epidermis of

the root (in healthy plants this is moist). Nutrient uptake is impaired or absent.

Moulds of all kinds: powdery mildews, downy mildew, grey mould of all species, sooty mould of all species, some black moulds. The exception here is slimy moulds which, on account of similarity in appearance, have been grouped with snails and slugs and covered by *Helix*.

Clinical

Impaired photosynthesis, deformed flowers, straggly, twisted, deformed appearance. Tree cancer. Mould and mildew. Sooty mould-black point (*Bipolaris* spp.), leaf spot (*Septoria* spp.), Alternaria black spot disease (*Alternaria* spp.) (Fig. 80).

Fig. 80 Black spot, *Alternaria* spp.

Appearance

Grey mould (*Botrytis* spp.) (Fig. 81)

Fig. 81 Gray mould, *Botrytis cinerea*, symptoms

This fungus produces sclerotia and can be present throughout the year in plant debris where cool humid conditions exist. Grey furry surface indicates spore formation. The spores are spread by wind. All above-ground parts are affected, although there is an affinity for fruit.

Dying flowers are often the first affected and from here the fungus spreads.

Indications of *Ferrum sulphuricum* for additional plant families:

Sooty mould-black point (*Bipolaris* spp.)

> *The embryo end of the growth darkens. It is caused by the two fungi and lives on decaying grasses and is very common. Spores are carried everywhere. Rain during grain development and filling enables the fungus to infect the seed or grain, and it develops slowly during the ripening process. The grains may still be used for seed stock because the germination is rarely affected.*
>
> (Grains R&D Corp.)

However, this makes the grain more susceptible, and a larger quantity of grain can be affected. Continued use of this infected seed will result in sterility and crop loss. It is better, when using infected seed, to spray shortly after seeding, using *Ferrum* to reduce infection and thus have clean seed for the next crop. In this way, resistance is built up and carried into the next generation, thus making susceptibility obsolete. What takes enormous

amounts of time and money through genetic engineering can be achieved cheaply and quickly through homeopathic treatment.

Septoria blotch(*Mycosphaerella* spp.)

Blotches on leaves, irregular in shape, tan to brown (Fig. 82), occasionally silvery with yellow rims. Along leaf veins, blotches have straight margins. Black specks, which are fruiting bodies, can be seen inside the blotches. The fungus survives in wheat residues. After rain in autumn, the spores are produced in great quantity, spread by wind, and can be carried over long distances in waterlogged areas, particularly in the hills, where spores are carried by running water. Infection is most likely in newly sown crops. After three weeks to a month, small black fruiting bodies form on the leaves. This is the time to spray *Ferr-s*. In moist conditions spores are produced and are carried from leaf to leaf by rain splash. In heavy rainfall, crop loss of up to 30% has been recorded. It is much less likely to spread in dry spells lasting up to a month. It does not affect grazing animals since it is a less lethal fungus than *Secale* or *Ustilago*. It is more similar to black spot than to ergot or smuts.

Fig. 82 Septoria leaf spot and canker, *Septoria musiva*, symptoms

Septoria nodorum blotch *(Leptosphaeria nodorum)*

Blotches on leaves that are yellow or tan to brown, oval-shaped, turning to grey as they enlarge. Leaves die with yellow tops. Chlorotic appearance. Fruiting bodies are grey-brown with specks within blotches. Later in the season the stems and glumes become infected. Grey and brown blotches with shrivelling of the grain. Seed loss may be total. Fruiting bodies with spores

are frequently found on both stem nodes and glumes.
The fungus survives in stubble and stalk debris. It affects wheat, barley, barley grass and brome grass. Spores develop after rain and are wind-dispersed over large areas. Early sown crops are easily infected. The ideal environment for infection is during warm, wet weather with heavy frequent rain. Spores spread from plant to plant by rain splash.

Relationship

Compare: *Sulph.*
Antidote to: *Calc., Cupr., Phos.*
Inimical: *Kali., Moly., Phos.*
Antidoted by: *Cupr., Mang., Zinc.*

Treatment of Cucurbits (*Cucurbitaceae*)

A. Ferrum metallicum

Iron. Fe. Trituration. Elemental iron used for this preparation.

General (see also Chapter 8)

Ferrum is needed for the process of photosynthesis. If there is an iron deficiency, plants become chlorotic, with a lack of chlorophyll.

Clinical

Chlorosis. Pale, sickly plants that nearly fall over. Imperfect assimilation, impaired photosynthesis, protein content low. Fruit and vegetables have no taste. Bacterial blights, waterlogging, head-tipping, blasting, *Phytophthera* spp.

Appearance

Root rot (*Phytophthora* spp.) (Fig. 83)

Fig. 83 Phytophthora root and crown rots, *Phytophthora* spp.

The first step in controlling any of the many diseases caused by *Phytophthora*

spp. is to obtain an accurate diagnosis. Although *Phytophthora* is a recognized disease, it has been misdiagnosed 50% of the time. A wide variety of cultural and chemical controls can be implemented for *Phytophthora* problems. Time spent collecting all the information for an accurate diagnosis will aid control efforts in the long run.

Chemical

Impaired photosynthesis, low protein content, systemic collapse of capillaries, paralysis of the capillary system. Impaired nutrition, little or no photosynthesis, low phosphorus and calcium content. Low sugar and starch.

Flowers and fruits

Flowers have increased pollination yet are sterile. No fruits, or incomplete fruit setting. Immature fruit drops too early.

Water needs

Either want of water or worse from watering.

Note

Ferrum must be used with care (see Chapter 8).

Relationship

Antidote to: *Calc.*, *Phos.*
Inimical: *Kali.*, *Phos.*, but not in *Ferr-p.*
Antidoted by: *Cupr.*, *Mang.*, *Zinc.*
Complementary: *Mag.*
Compare: *Ammonias*, *Calc.*, *Kali.*, *Mag.*, *Mang.*, *Nit-ac.*, *Phos.*

B. Ferrum phosphoricum

Ferric phosphate. Ferrum phosphoricum album. Ferrous-ferric phosphate. White phosphate of iron (Schuessler's). Said to be a true ferric phosphate ($FePO_4$) unlike the ordinary phosphate of iron which is a ferrous-hydric phosphate ($Fe(H_2PO_4)_2$). Trituration.

General (see Chapter 8)

Schuessler put *Ferr-p.* in the place of *Aconitum*, *Belladonna*, *Gelsemium*, *Arnica* and others which correspond to circulation disorders. Relaxation of tissue. When the molecules of iron contained in the cells of the cambium have suffered a disturbance through some injury or wound, the affected cells grow flaccid. If this affection takes place in the annular fibres of the capillaries, they are dilated and sap is increased, and is reached during the first stage of inflammation. When cells are brought back to normal with *Ferr-*

p. the cells can cast off disease.

Clinical

For fresh wounds, contusions, sprains etc. and for removal of excessive flow of sap. It vies with *Arnica* and *Calendula* as a first-aid remedy. Indicated in the first stages of rust; reddish inflamed roots, dry under epidermis. Very thirsty plants that do not assimilate nutrients. Capillary congestion. Pale, straggly-looking plants with many eruptions. Tan spot, blotches, bacterial blights, take-all. (Fig. 84)

Fig. 84 False smut, *Ustilaginoidea virens*, sign

Appearance

Bacterial blights - halo spot(*Pseudomonas* spp.)

Small green oval, water-soaked spots on the leaves and sheaths up to 10 mm across. The centres of the spots change to straw or brown colour. A small green water soaked halo appears on the surrounding leaf. Later the patches become browner and join together in irregular patterns (Fig. 85).

Fig. 85 Halo blight on common bean

Stripe blight (*Xanthomonas translucens*)

Similar to *Pseudomonas* but elongated without halo. First water-soaked, and then brown stripes with yellow margins, which later join in irregular patterns. Emerged florets appear mottled, brown or white (*Acon.*, *Bell.*) and may be sterile. Leaves wither and die.

Blight bacteria survive on seed and debris. They spread by rain splash or leaf contact. Aphids can also act as carriers. Damp weather favours development and spread. Dry weather stops spread.

Bacterial wilt (*Erwinia* spp./*Ralstonia* spp.)

Wilting occurs because of a lack of moisture in a plant. Bacteria introduced into a plant create a thick white substance that restricts the flow of moisture in a plant. This eventually kills the plant. The bacteria are carried by certain pests that overwinter in or near the garden area. Corn can be attacked by flea beetles that carry the bacteria. Cucumbers and watermelons are affected by cucumber beetles, such as the striped and spotted cucumber beetles (*Acalymma vittata* and *Diabrotica undecimpunctata*) (Fig. 86) that carry the bacteria. Cucumber leaves are the first to be seen to wilt, followed by wilting of the vines.

Fig. 86 Spotted cucumber beetle *Diabrotica undecimpunctata*, adult

Water needs

It is advisable not to water much in dry weather to stop spread. The plant is very thirsty and wilts. Use trickle system.

Flowers and fruits

Either abundant pollen or complete absence. Premature flowering, difficult

flowering, difficult setting of the fruit.

Relationship

It is not only *Ferrum* preparations that are indicated in such diseases, the *Ferr-p*. debilitation and suppurative processes paint a perfect picture of the capabilities of *Phos*. to upset the epidermis with blackish ulcers. *Nit-ac*. and *Kali-c.*, *Nat-s*., and *Nat-c*. can be indicated for similar symptoms. Although normally *Phos*. is the antidote of *Ferr*., here it is seen as a complement, because the normally antagonistic actions are combined. This creates a substance which not only acts on the capillaries – hence the rot – but is also a stimulant for flowering and fruit-setting.

Treatment of True Grasses (*Gramineae/Poaceae*)

A. Aconitum napellus

Aconitum napellus. Monk's hood. Family: *Ranunculaceae*. Tincture of the whole plant.

General

Grows in moist pastures and waste areas in mountainous districts.
The rapidity of action determines its appropriateness for conditions where symptoms set in with great intensity, as in rust. *Aconitum* is homeopathic to tension. Active congestion of the capillary system, especially after cold spells, cold dry air at night. The keen cutting winds of the hills (amongst which the plant grows) give the signature of its remedial action. Chill, injury or mechanical damage. Extreme sensitivity to light. Plants have a marked thirst. Great and sudden sinking of strength, effects of both heat and cold. This remedy has been used with great success in the treatment of rusts.

Clinical

Stripe rust, leaf rust (Fig. 87), beetroot and bean rust, marigold rust, iris rust, poplar, rose, snapdragon. Banana rust. Bean blossom thrips. Rust-mite. Active congestion of the capillary system. Rust - rapid onset of symptoms. Worse cold dry nights, injury, mechanical damage. Barley yellow dwarf virus.

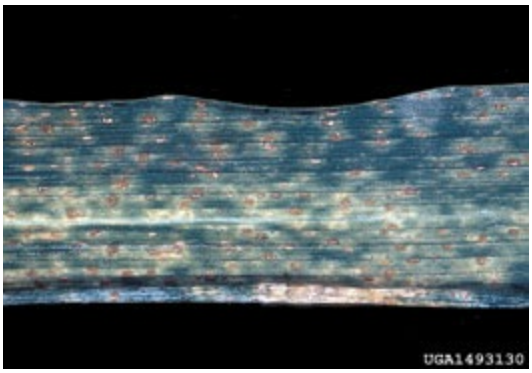

Fig. 87 Wheat leaf rust, *Puccinia recondita*

Appearance

Rusts with bright red colouring and yellow margins. Hard red swellings of the leaves, bloated and hot and bright red. Red spots, swollen and shiny and broad. Sudden wilting.

Rust diseases (*Puccinia* spp.)

It is estimated that there are many hundreds of fungi associated with rusts. They cause a yellowish small patch or spot on the upper surface of the leaves. This develops into a powdery pustule, the powder being the stalks which produce the spores. These stalks rupture the epidermis, which is why they appear raised above the surface. Wind or rain and water sprinklers spread the spores. Rust is the common name for the disease caused by several different fungi which produce dark-coloured spore pustules on the surface of infected plants (Fig. 88). Additional symptoms include leaf and stem cankers, stunting, yellowing, galls, and a general unsightly appearance of the infected plant.

Fig. 88 Cedar-apple rust, *Gymnosporangium juniperi-virginianae*, symptoms

Rust fungi may be controlled by the integrated use of several different management practices. Rusts with two hosts may be reduced by eliminating the alternate host (if one of the hosts is undesirable). Removing infected bedding plants or other annuals will help to reduce spread in the garden. In conventional agriculture and horticulture, rust control is very difficult because the spores can be blown or washed over large areas very quickly. Some rusts cause galls, which are uniform in appearance and connected with particular fungi. The economics of spraying rusts with chemicals make their use prohibitively expensive for wheat and other grains

Barley yellow dwarf virus

This disease affects many species of the *Graminae/Poaceae*. All cereals and many grasses fall prey to it (Fig. 89). It only survives in living plants. Infection is restricted to the phloem. The virus can only be seen with an electron microscope.

Fig. 89 Barley yellow dwarf virus on common wheat

Epidemics appear to occur every 2-3 years, restricted to high rainfall areas. Yield losses can run up to 80% in cereals. Late infection can reduce the yield up to 20%. There is no chemical control for yellow dwarf after infection. The only available control is killing the aphid vector when detected.
But if the infection has already started, the plants are usually considered lost. *Acon*. and *Bell*. can do much for this problem even after infection. Aphids carry the virus from plant to plant. An aphid needs to feed on an infected plant to become a lifelong carrier.
Four different types of yellow dwarf virus have been identified. Their differences are expressed in their vectors (different species of aphids), the degree to which they can be transmitted and the extent of damage.
Two types of aphid, the oat aphid (*Rhopalosiphum padi*) and corn leaf aphid (*Rhopalosiphum maidis*), are the main species to spread yellow dwarf. The oat aphid feeds on oat, wheat, barley and grasses. Corn leaf aphids feed on cornleaf barley and some grasses. Three more aphid species have been connected with its spread: the grain aphid (*Sitobion* spp.) and two cereal root aphids (*Rhopalosiphum insertum* & *Rhopalosiphum rufiabdominalis*).
Aphids migrate in autumn and spring from kikuyu grass, paspalum, couch and African lovegrass. Kikuyu seems to be more infected than others.
Symptoms are often confused with nutrient deficiencies, waterlogging and other stresses. The leaf symptoms differ between oat, barley and wheat.

Affected Plants:

<u>Oat</u>

This strain is more prominent in the crimson pink reddening of the leaves, which is the reason it is included under *Bell*. Blotches appear on leaves from the tip downwards, turning red on older leaves, while the younger leaves show the interveinal chlorosis. The varieties that turn yellow/orange should be treated with *Acon*.
Red spots, rust, sometimes oozing sap, red, purple or bluish. Swelling of eruptions. Rust with orange or dark yellow margins. Dark brown spots. Roots shiny and swollen or dry and swollen. Gangrenous parts of stems, leaves and flowers. Red spots the colour of blood.

<u>Wheat</u>

Interveinal chlorosis is the first sign of the yellow dwarf. The colour is yellow/orange and there is less pronounced reddening of leaf tips.

<u>Barley</u>

Barley has a bright yellowing of the leaves and pale yellow interveinal chlorosis. Sometimes reddening of the leaf tips occurs. In all cases of yellow dwarf, if infection occurs in young plants, they stunt and grain yields are sharply reduced, often with shrivelling of the grains. In general, sick plants are stimulated to produce seed to ensure survival of the species. In grain, tillering is poorly developed and sterile heads are common.

Grasses

Grasses do not always show symptoms. *Phalaris* shows yellowing, whereas the rye grasses show reddening or purpling of the leaf tips. (The latter should be treated with *Bell*.) However, several rusts survive in winter on several types of grasses and so we must be careful not to accept everything at face value, but check which grasses the fungus selects as a winter host.

Flowers and fruits

Flowers dry, hot, overproduction of pollen, slowing the setting of fruit.

Water needs

Thirsty, but generally worse from watering.

Relationship

Compare: *Ammoniums*, *Bell*.

Antidote: *Bell*.

B. Secale cornutum

Spurred rye. Ergot of rye (infected with the fungus *Claviceps purpurea*).

Kingdom: Fungi.

General

A black horn-like spur, which is the result of the action of the fungus *Claviceps* on the grains of rye. Rye and other cereals such as grasses are apt to be affected with ergot disease when grown on damp, ill-drained paddocks that are water-logged.

If breeding cattle are grazed on pastures where infected grasses grow or are fed infected hay or straw, they are liable to drop their calves. Although the link between ergot and brucellosis is not firmly established, the close similarity in terms of symptoms strongly suggests that ergot is in fact the cause of this disease. The correlation between late abortion due to brucellosis and the occurrence of miscarriage around the seventh month of pregnancy in the remedy *Secale* supports this contention.

Brucellosis

This disease is very hard to eradicate by conventional means. The stables are usually treated with flame-throwers, and all cattle in the herd are generally slaughtered, yet the disease still seems to take hold with equal vigour. In our practice in India, we have used *Secale* with exceptional success in the treatment of brucellosis and ergotism in cattle and its after-effects in humans. To destroy the ergot on our fields too, we also treat the cattle shed, the pasture, and the grain in all such cases.

Since ergot affects all grains as well as grasses, *Secale* will cover all ergot species generically, given the fact that the properties of all grasses and grains in the materia medica do not differ very much, except in concomitants and modalities [compare Boericke's Materia Medica – sweet vernal grass (*Anoxanthum odoratum*), oats (*Avena sativa*) and corn (*Stigmata maydis*)]. All have disturbances in the generative sphere to a more or less pronounced degree, corresponding to the flowering and fruiting stage in plants. The symptoms listed below are not due to ergot:

Avena: flowers and fruits disturbed, small or absent grains.

Stigmata maydis: flowers and fruits affected.

From these obvious similarities, it follows that *Secale* must, by necessity, have similar symptoms, which is further confirmed by the descriptions found in the materia medica.

Another grain, darnel, is frequently infected with ergot, and many epidemics of miscarriage are due to this grain. It has had an evil reputation since ancient times and its name, darnel, means stupefied. Mr. A. S. Wilson in transactions of the Edinburgh Botanical Society for 1874 declared that the poisonous properties of this grass are due to ergot, which so commonly infects it. Note also that the cases of poisoning have been more frequently observed in low-lying wet districts and during the wet season.

Clinical

Ergot, in all grains and grasses (Fig. 90).

Fig. 90 Ergot

Appearance

Purple-black, horn-like kernels (sclerotia) replace one or more seeds in the head. The kernels are larger than the grain. The first sign of infection is during flowering when yellowish droplets of sugary slime are produced. Ergots survive in the soil for up to one year, producing spores which infect open wheat and other grain and grass florets. Infection is aided by cool, wet weather during flowering. Spores are spread by rain splash or insects attracted to the sugar. Ergots affect open pollinated species more than others. This is the main reason why most grain and grass species are affected. Hybrids are more often affected than other varieties, and oats and barley less so.

Ergot is rare in Australia. Conventional control is not available. The best advice given by the Grain Board is to sow clean seed, allow one year fallowing, or grow a different crop. Mowing or spraying a grass pasture to prevent flowering reduces ergot formation but spraying has the disadvantage that grass is contaminated with herbicides.

Note

Secale cereale (rye) sown in two successive crops eradicates couch grass, chickweed and most other weeds.

C. Ustilago maydis

Corn smut. Kingdom: Fungi. Trituration.

General

Like *Secale*, with which it should be compared, *Ustilago* affects animals that feed on grains affected with smut in a similar manner; they miscarry. Roullin remarks that:

… sheep lose their wool, mules cast their hoofs, and chickens lay eggs without shells.

(Roulin, quoted by Clarke)

Like *Secale*, *Ustilago* has an affinity with the generative sphere. Clarke mentions a case of a female dog losing five foetuses at the fifth week of gestation and all the hair on her body, whilst her nails were loose. In plants, the bark will loosen, and it may well prove to be another remedy like *Sil*., which arrests dieback.

Clinical

Smut, flag smut, bunt, loose smut, head scab. Found on oats, sorghum, wheat, barley, triticum and corn. (Fig. 91, 92)

Fig. 91 Smut, *Ustilago maydis*

Fig. 92 Corn smut, *Ustilago maydis*

Appearance

Flag smut (*Urocystis tritici*)
Long grey raised streaks on the leaves, shafts and stems. Heads badly damaged. These streaks break through, showing masses of grey black spores, which are spread on clothes, animals and insects. Affected leaves are twisted and split lengthwise.
Stunted plants give early warning, although spotting them is not always easy. Tillers will perpetuate the damage on future crops. Spores are wind borne and survive for several years. Early sowing during warm weather favours and promotes infection.
Water needs
Likes evening watering. Appears wilted in the morning.
Bunt (*Neovossia indica – Tilletia indica*)
Bunt is difficult to spot, but at maturity smutted heads can be seen, grey brown bunts replacing the grain, the balls forcing the glumes apart. Infected plants are shorter and stay green longer, taking more time to mature. The balls break and release spores during harvest. Fishy odour. Cool and moist conditions favour infection at planting time. The fungus grows through the plant affecting only the head.
At warmer temperature infection is less likely. Even resistant varieties may become affected, especially when blight is severe. Spores remain dormant for up to several years.
Water needs
Normal.
Head scab *(Fusarium graminearum)*
Head scab is classified under the action of smuts and covered by *Ustilago*. Cattle do not like this stock and when infected with head scab they miscarry, become infertile, develop haemorrhage of the intestinal canal and refuse food. There is no conventional chemical control available for smuts.
Premature bleaching of a section or all of a head. Pink and orange fungal strands appear over the head. Infected areas are most often sterile. Seeds are shrivelled and have a pinkish colour. Head scab survives in the soil, on cereal residue and grass. The spores are spread by rain splash. Moist conditions and warm to hot weather are most favourable to this fungus.
Water needs
Normal.
Loose smut (*Ustilago nuda* f. sp. *tritici*)

When the heads emerge, a mass of dark brown powdery spores can be seen (Fig. 93). Initially, the spores are held in a thin membrane which soon breaks. All that remains of the head is a bare stalk and some drift. Spores are wind-borne and affect other wheat and barley crops. Moist, warm conditions favour infection.

Fig. 93 Covered smut, *Ustilago hordei*, symptoms

Infected grain is not visibly different from healthy grain until the heads emerge.

Water needs

Normal.

D. Berberis vulgaris

Common barberry. Family: *Berberidaceae*. Tincture of the bark of the root.

General

An introduced species in Europe, scattered but long established.

According to Prof. Henslow:

> *…it was thought by farmers in the middle of the last (19th) century, that barberry blighted wheat if it grew near the hedge. Botanists thought the idea ridiculous, yet the farmers are right. Their observations consisted of the occurrence of rust in the wheat grown closely to barberry, which extended steadily across the whole crop. A fungus attacks the leaves of barberry, producing orange coloured spots. Its spores attack the wheat. These develop parasitic threads within the leaf, from which arise the red rust spores. Following this, dark brown or black spores consisting of two cells, called wheat mildew, appear. After some time these form one-celled red spores, which attack the barberry and the cycle is*

completed. Barberry is the primary host plant of this cycle.

(Henslow, quoted by Clarke)

The roots are affected in a peculiar manner, producing whitish vesicles on the epidermis. The roots feel dry to the touch, or are covered in a frothy viscid slime. The vesicles may appear red as in rust, while the whitish froth is connected with mildew.

The plant is either very thirsty or requires little water. Nutrients are either taken up very rapidly or not at all. The evaporation rate is higher than normal, which accounts for thirsty plants.

Respiration and photosynthesis are impaired, due to mildew or rust. The plant has a tendency to lodging.

Flowers have incomplete stamens or produce no pollen. The ovaries may not function properly, resulting in impaired fruit-setting capacity.

The rust has small red pustules that gradually turn brownish and larger.

Clinical

Rust, mildew.

Relationship

Compare: *Acon.*, *Ammonimus.*, *Bell*.

E. Belladonna

Deadly nightshade. *Atropa belladonna*. Family: *Solanaceae*. Tincture of the whole plant when beginning to flower.

General

Grows in chalk and limestone soil in woods, rough and cultivated ground. Goats and rabbits can eat nightshade with impunity. Cats and dogs are only mildly affected. In plants, it has been used with very good results on rust in fruit trees. *Bell*. acts on all parts of the organism.

Sensitivity to light (*Acon*.) is a leading feature, making for leaves that either do not open, or burn. Sensitivity to changes from warm to cold in damp weather, and draughts of air.

Belladonna, like *Aconitum*, is fast-acting, which means that it is more suited to symptoms that develop rapidly. Heat, redness and burning. Darker red than *Acon*. Red with orange margins (*Acon*. red and yellow). Purple-red, orange-yellow. Red parts such as flowers and fruit look pale. Blistering from heat. Swelling and bluish redness. Sunburn (Fig. 94). Windburn. *Bell*. has been used with excellent results for the dark rusts.

Fig. 94 Sunscald damage

There are hundreds of different fungi that are supposed to cause the diseases we call rust. Generally they cause some sort of small yellow or red patch or spot on the surface of leaves. Under each spot, on the lower surface of the leaf, a powdery pustule appears. This happens when the fungus produces the stalks of spores. These stalks burst the epidermis of the leaf, and the spores are then blown away in the wind.

Rusts are usually difficult to control because new infections can occur over a large area. Rusts develop very quickly. Hence *Aconitum* and *Belladonna* as rapidly-acting remedies can do much to control this.

Some rusts stimulate plant cells to form galls. Rust in cereal crops cannot easily be sprayed economically with conventional methods. *Aconitum* and *Belladonna* can serve this purpose satisfactorily.

Some rusts need two different host species to complete their life cycle and survive the cold in areas with cold winters. For example in Europe the poplar rust spends part of its life on the larch, while wheat rust spends part of its life on barberry. They produce thick-walled spores in autumn. These survive the winter to infect the next sequential species in the spring. Spore germination requires some moisture, but generally not enough is known about the weather conditions that favour rust disease.

Clinical

Carnation rust, fuchsia rust, iris rust, peach rust, raspberry rust. Rust with orange margins, darker red than *Aconitum*; worse cold damp weather. (Cold, dry: *Acon*.) Barley yellow dwarf virus, white florets, where other colour is healthy. Take-all, anthracnose. Acacia spotting bug. Banana rust thrips, rust mite.

Appearance

Symptoms are often confused with nutrient deficiencies, waterlogging and

other stresses. The leaf symptoms differ between *Cruciferae/Brassicaceae*, *Cucurbitaceae*, *Rosaceae* and *Gramineae/Poaceae Species* such as oats, barley and wheat.

Grain rust (*Puccinia graminis*)

Crimson pink reddening of the leaves is more prominent in oats, hence the use of *Bell*. From the tip down the leaf shows blotches, turning red on older leaves, while the younger ones show interveinal chlorosis. The varieties that turn yellow/orange should be treated with *Acon*. (Fig. 95)

Fig. 95 Wheat stem rust, *Puccinia graminis*, symptoms

Red spots, rust, sometimes oozing sap, red, purple or bluish. Swelling of eruptions. Rust with orange or dark yellow margins. Dark brown spots. Roots shiny and swollen or dry and swollen. Gangrenous parts of stems, leaves and flowers. Red spots the colour of blood.

Flowers and fruits

Flowers are deficient in pollen (*Acon*. opposite). Small fruits, falling prematurely. Leaves falling due to rust. Scarlet redness of rust on leaves, stems and flowers. Red spots on fruits.

Relationship

Compare: *Acon., Ammonimus*.

Treatment of Mints (*Labiatae/Lamiaceae*)

Lacticum acidum

Milk acid. Lactic acid. $HC_3H_5O_3$. Dilution.

General

Lactic acid was discovered by Scheele in sour milk, the result of spontaneous fermentation of sugar of milk under the influence of

casein. It is also met with in many vegetable products, which have turned sour.

(Hering)

Milk acid is a bactericide of the first order, particularly in plants. If lactic acid slightly oxidises it produces pyruvic acid, which functions as the trigger for the Krebs cycle in plants. For this reason *Lacticum acidum* in potencies should play an important role in the respiration of plants. Pyruvic acid plays an important role in the chemistry of biological processes. It is an intermediate in the conversion of proteins, carbohydrates and fats and is found in abundance in cucumbers.

Mosaic virus can be kept under control through the use of milk sprays (Conacher, 1991). Conacher recommends 1 part of milk and 9 parts of water, in repeated applications ten days apart.

To control mildew, one part of milk and two parts of water are used. To cover 20 m^2, it is advised to use 0.5 l of milk in 1 l of water. Therefore a hectare (10,000m^2) would require 250 l of milk, which would be too costly. Potencies of *Lac-ac*. will act equally well at a fraction of the cost.

Clinical

Mosaic virus and mildews.

Relationship

Compare: *Sal-ac*.

Complementary: *Acet-ac., Ox-ac*.

Treatment of Nightshades (*Solanaceae*)

Ocimum minimum/basilicum

Basil. Family: *Labiatae/Lamiaceae*. Tincture of the whole plant.

General (see also Chapter 9)

Oci-b. is a constitutional remedy for tomatoes because of its special affinity. In companion plants this phenomenon is frequently met with, and can provide new insights into the relationships between the different remedies in the context of human treatment. From further study, much can be learned about the internal relationships between many different remedies that to date have not enjoyed such extensive scrutiny.

It will also improve the taste of the tomato crop.

Clinical

All pests and diseases of tomatoes. Anthracnose, bacterial cancer, bud worm (Fig. 96), fusarium wilt, russet mite, spotted wilt, tobacco mosaic virus,

blossom end rot.

Fig. 96 Tobacco budworm, *Heliothis virescens*, larva

Treatment of Pulses (*Leguminosae/Poaceae*)

Aconitum napellus

Monk's hood. *Ranunculaceae*. Tincture of the whole plant.

General

There is a comprehensive description of the use of *Aconitum* to treat rust diseases in this chapter in the "Treatment of True Grasses" section. Here we should like to again mention the typical symptoms that indicate *Aconitum*: rapid onset, severe worsening, injuries or damage caused by mechanical effects, thirst. Sudden and severe weakening as a result of heat or cold.

Clinical

Stripe rust, leaf rust, beetroot, bean rust, marigold rust, iris rust, poplar, rose, snapdragon. Banana rust. Rust mite. Active congestion of the capillary system. Rust - rapid onset of symptoms (Fig. 97). Worse from cold dry nights, injury, mechanical damage. Barley yellow dwarf virus.

Fig. 97 Rust, *Puccinia hordei*, sign

Appearance

Rust with bright red colouring and yellow margins. Hard red swellings of the leaves, bloated and hot and bright red. Red spots, swollen and shiny and broad. Sudden wilting.

Flowers and fruits

Flowers dry, hot, overproduction of pollen, slowing the setting of fruit.

Water needs

Thirsty, but generally worse from watering.

Relationship

Compare: *Ammoniums*, *Bell*.

Antidote: *Bell*.

B. Chamomilla

German chamomile. *Matricaria chamomilla*. *Compositae*. Tincture of whole plant.

General

Grows at roadsides and waste areas on stony ground. Hahnemann says:

> *A painful increase in the sentient action followed by a considerable depression of the vital force. It increases the general sensitivity of the*

plant, a property that seems to give rise secondarily to various organic alterations that Cham. is capable of producing.

(Hahnemann)

Cham. has much in common with *Calc*. because it covers acute stages of *Calc*. problems, where calcium is deficient or in excess in the soil. It is the carbonate part that forms the link. It is thus equally a close relation with all carbonates including carbon itself. It is in itself hardly ever seen as a constitutional remedy. It has a wide range of action. Consultation will thus induce a plan to be implemented in steps – aiming to make a farm look so natural that even nature will be fooled.

The farmer needs to give up NPK – use *Cham*. instead to enhance microbial life and provide for distraction of pests. We recommend careful spraying, leaving weeds on the edges as an alternative food source for pests and an additional hiding place for pest predators. Reduction of food source always results in population decline.

Fungi must be given food, lest they attack plants. A large number of fungi function to decompose debris, which is converted to nutrients for the crop. A thick layer of plant debris, such as straw, pea straw, bean straw, and compost can accomplish this.

Check carbon content and binding elements (see also Chapter 12, *Carbo vegetabilis*).

Clinical

Damping off. Composting. Growth promoter. Contains a hormone that increases yeast. Wilting, windrowing. Rusts, both yellow and red.

Appearance

Chamomilla is especially suitable for plants that have been overdosed with pesticides. Debility is marked. The plant is hot and thirsty. The roots may be mouldy.

Damping off

This is the kind of debility that is typical of the *Chamomilla* state. It is often caused by an excess of nitrogen, which is usually given as a boost in the seedling stage, but which causes collapse of the seedlings, called damping off. Plants treated with *Cham*. when very young become hardy against a number of plant diseases.

The roots may have a reddish appearance, be dry at the tip, or have froth on them. The plant is thirsty, the roots have a putrid smell. Sometimes there is a

thick, yellowish mould, or blisters that break open. The plant appears to lack nutrients, yet application of fertiliser has little effect. The plant is wilted and very thirsty. Respiration impaired, oxygen release low. Contraction of respiratory problems. Photosynthesis impaired, starch and protein content low. Carbon binding deficient (*Calc.*, *Mag-c.*, *Kali-c.*, *Am-c.*). Contraction of chlorophyll cells.

Nutritional

Nutrient content low. Nutrients "locked up", inability to assimilate. Food value is low, due to low starch and protein content. Reduces the need for liming.

Flowers and fruits

Flowering impaired, possible underdevelopment of ovaries, or insufficient production. Stamens are swollen, female flowers and parts do not function properly. Possibly deformed fruits which may rot on the tree due to over ripening.

Water needs

High.

Relationship

Compare: *Calc.*

Treatment of Roses (*Rosaceae*)

A. Lapis albus

Silicofluoride of calcium. $CaSiF_6$. Taken from Lapis albus (a species of gneiss found by Grauvogl in the mineral springs of Gastein and named by him. The waters flow over the gneiss formations into the valley of Aachen where goitre and cretinism abound). Trituration.

General

The salient features of *Lap-a* belong to rots and the generative organs, the flowers being absent, stunted, shrivelled, and otherwise deformed, if the plant gets to that stage. Any soil in which your plant gets sick should be fallowed for one year, and provided with humus or humus- forming aids.

Rots of nearly all kinds, cancers on trees with no ulceration, mottled and rotten leaves. Scarring of bark, pale appearance.

Clinical

Cancer in trees. Scarring on bark, tumours on roots, potato rot. Black leg potato, black bulb rot, black rot, radish, halo spot, black rot, black spot roses,

strawberry blossom-end rot, potato gangrene. Rots and decaying diseases in all species. Some forms of mosaic virus. All rots are dry rots.

Appearance

Since all dry rots are similar, only three examples will be given. Symptoms are identical for any part of the plant, be it roots, stems, leaves, flowers or fruits.

Bitter rot, apple *(Glomerella cingulata)*

Signs of disease come on late, near ripening. They consist of small brown spots spreading rapidly to cover one third of the fruit in two to three days. In humid conditions, this results in the growth of masses of pink spores which form concentric circles.

It can completely dry out the fruit as the skin sinks in deeper and deeper, till the mummification is complete, the fungus surviving in a self-made cocoon till next season.

When the temperature drops below 20°C (68°F) and after sufficient rain, the cocoon collapses and the spores are blown out by the wind and back onto the trees.

Willy Sharp, Gravenstein and Granny Smith are mostly affected, but other apples can as easily be affected.

Indications for additional plant families:

Black root, radish (*Aphanomyces raphani*)

This fungus produces irregular black patches on the root. These areas may become sunken. Sometimes the root may split, thought the tissue remains firm. Warm, moist conditions are most favourable for this disease. The fungus can survive several years in the soil, and is spread by rain splash and running water.

Pen root radish is more often attacked than bulb root.

Blossom end rot, tomato

The symptoms only occur on the blossom end of the fruit. The area becomes brown, tough and sunken. Sometimes, as in egg tomatoes, the effect is entirely internal, showing only a dark brown interior through the skin. It occurs halfway through the maturation process.

These symptoms indicate that there is a lack of calcium; the fruit cannot form. The calcium content in the soil may be too low, or the soil too acidic, or the levels of NPK too high; there may be a fluctuating water supply, or too many leaves forming simultaneously with fruit (available calcium goes to the

leaves). *Lap-a* will redress the uptake of calcium where sufficient levels are present. The pH has little to do with the health of a plant, as on biodynamic farms healthy plants are grown in a pH of 3.5. *Lap-a*, containing calcium silicofluoride, stops the dry suppuration and balances calcium uptake, or, alternatively, if not available in abundance, regulates the plant's use of it. At the first sign of infected tomatoes, immediately spray *Lap-a* 6X and the infection will be nipped in the bud.

Tree canker

It is the dry rots and tree cankers that *Lap-a* will do much to redress. (Fig. 98)

Fig. 98 Chestnut blight or canker, *Cryphonectria parasitica*, symptoms

As with *Calc*. preparations, *Lap-a* should be used with the utmost caution. It cannot be stressed enough that very small doses exert a great influence over plants, particularly the tissue salts, because they form the essential building blocks of the plant.

Relationship

Compare: *Am-c., Calc., Cham., Kali-c., Mag-c., Nat-c.*
Antidoted by: *Ammoniums, Nit-ac., Sulph.*
Complementary: *Sil., Nat-sil-f.*
Antidote to: *Ferr., Magnesiums, Mang., Zinc.*
Inimical: *Magnesiums, Phos.*

B. Belladonna

Deadly nightshade. *Atropa belladonna*. *Solanaceae*. Tincture of whole plant when beginning to flower.

General

Belladonna has already been described under "Treatment of True Grasses (*Gramineae*)". Here we will concentrate on the various rust diseases.

Clinical

Carnation rust, fuchsia rust, iris rust, peach rust, raspberry rust. Rust with

orange margins, darker red than *Aconitum*. Worse cold damp weather (Cold, dry: *Acon*.). Barley yellow dwarf virus, white florets, where colour is otherwise healthy. Take-all, anthracnose. Banana rust thrips.

Appearance

Rapid onset of symptoms; many plants affected in a short period. Plants thirsty and limp. Leaves hanging down, giving a wilted appearance. The rusts are dark red, or with very red margins, and spread rapidly from leaf to stem to trunk and other plants nearby.

Rose rust

Rust fungi may be controlled by the integrated use of several different management practices. Rusts with two hosts may be reduced by eliminating the alternate host (if one of the hosts is undesirable).

Removing infected bedding plants or other annuals will help to reduce spread in the garden. Depending on the host, tolerant varieties may be available. Lastly, *Belladonna* and *Aconitum* are among the most effective remedies for the rust disease.

Black spot of roses (*Diplocarpon rosae*) (Fig. 99)

Fig. 99 Black spot, *Diplocarpon rosae*

Black spot of roses is a fungal disease caused by *Diplocarpon rosae*. The disease develops in moderate temperatures when moisture is present on the leaf surface. General leaf chlorosis and circular, well-defined, black spots on leaves are the most common symptoms. The disease is similar to powdery mildew in that it overwinters in canes and in fallen leaf debris. The fungus germinates in favourable conditions and is spread to susceptible hosts by splashing water or airborne spores. Sanitation is important in the control of

black spot. Rake and destroy fallen leaves and prune out infected canes. Look for tolerant varieties if black spot is a common problem in your area.

Sooty mould (*Cladosporium* and other spp.) (Fig. 100)

Fig. 100 Pecan scab, *Cladosporium caryigenum*

Sooty mould is a term used to describe the black sooty fungal growth on many trees and shrubs. Several different fungi can cause sooty mould. These fungi are generally not parasitic to the plants they grow on, but grow on honey-dew produced by insects (aphids, scale and mealy bugs). Sooty mould is common in warm, humid weather. The fungi appear on leaves, stems or fruits as a superficial, black growth. The fungi do not penetrate the host tissue and can be wiped off with a damp cloth. Although sooty mould fungi are not pathogenic, they do create a problem when the growth of the fungi becomes dense, reducing the amount of light which reaches the green leaves. This reduction in light limits carbohydrate production by the plant and weakens it‘s growth. The most effective means of controlling sooty mould, besides treating it when too late with *Belladonna,* is managing honeydew-producing insects.

Belladonna, like *Aconitum,* is fast-acting, hence it use for symptoms that develop rapidly. Heat, redness and burning. Darker red than *Acon*. Red with orange margins (*Acon*. red and yellow). Purple-red, orang-yellow. Red parts such as flowers and fruit look pale. *Bell*. has been used for the dark rusts with excellent results.

Additional ornamental plants susceptible to rust:

Fuchsia rust (*Pucciniastrum epilobii*)

This causes purple-red blotches on the upper leaf surface. These blotches subsequently die and become dry and brittle, with purple spores on the edges on the underside of the leaves. The spores can range from yellow to orange-red or purple.

Iris rust (*Puccinia iridis*)

This disease is characterised by rusty red powdery spots on both sides of the leaves. The leaves turn chlorotic around the spots, which can spread to the whole leaf. Although the plant may lose some leaves from this rust, it generally survives. This rust is spread mainly by wind and it is worse in warm and humid weather. Irises grown both from rhizomes and bulbs are affected, the former more than the latter.

Powdery mildew of roses (*Sphaerotheca pannosa*)

Powdery mildew of roses, caused by *Sphaerotheca pannosa*, is extremely common worldwide. The fungus attacks young, succulent foliage. The symptoms begin as slightly raised, blister-like, red areas on leaves. Eventually all infected above-ground plant parts will develop a white powdery fungal growth.

S. pannosa overwinters in infected canes or buds and in fallen leaves. In spring, new shoots become infected from old mycelia from conidia (asexual spores) or from ascospores (sexual spores). Conidia and ascospores are disseminated to other susceptible hosts by air currents. The conidia and ascospores germinate and directly penetrate the plant. The disease is favoured by night temperatures between 14-17°C (58-62°F) and day temperatures between 18-26°C (65-78°F). The fungal spores cannot germinate in free water, but germinate readily when the relative humidity in the plant canopy is high (97-99% at night and 40-70% during the day).

Powdery mildew is managed by good sanitation practices. Prune out all infected canes, remove fallen leaves, and destroy all infected plant material. With severe infestation, it is advisable to plant resistant varieties.

Other common ornamental hosts of powdery mildew fungi:

Euonymus, photinia, lilac, pecan, verbena, crepe-myrtle, sunflower, catalpa, cotoneaster, holly, locust, mesquite, mulberry, privet, apple, pear, phlox, zinnia and stone fruits. We see that several fruit trees will benefit from this remedy, since it is often the first indicated among all remedies for controlling rust fungi. Peach, plum, nectarine and apple rust are examples.

Flowers and fruits

Flowers are deficient in pollen (*Acon*. opposite). Small fruits, falling prematurely. Leaves falling due to rust. Scarlet redness of rust on leaves, stems and flowers. Red spots on fruits.

Relationship

Compare: *Acon.*, *Ammonimus*.

C. Natrium salicylicum

Salicylate of sodium. $NaC_7H_5O_3$. Trituration/ solution.

General

The natrium component refers to salination problems or deficiencies in some salts in the plant. All Natrium-compound salts will be affected in plants. Plants defective in lime salts, which often wilt easily, do not stay upright well. The sap is not of normal consistency; it looks and feels as though it is decaying. There is capillary congestion, imbalance in nutrient uptake. Plants become infected and die.

Clinical

Tobacco mosaic virus, blue mould, anthracnose, downy mildew, angular leaf spot, potato virus, alfalfa virus, barley yellow dwarf virus. Septoria blotch, tan spot, ring spot, eye spot, scald. *Fusarium* spp (Fig. 101, 102).

Fig. 101 Fusarium head blight, *Gibberella zeae*

Fig. 102 Bacterial spot, *Xanthomonas vesicatoria*, symptoms

Relationship

Compare: *Sil., Ferr-p., Phos., Calc-f. Sal-ac.*
Inimical: *Kali.*
Antidoted by: *Phos.*

D. Salicylicum acidum

$C_6H_4(OH)COOH$. Artificially prepared from phenol.

General

Salicylic acid is found in nature in the leaves and bark of willows and in oil of wintergreen and is synthetically obtained from carbolic acid. A recent discovery is that aspirin given to plants when sick greatly speeds recovery. It has been widely used as a food preservative. Prolonged use in humans causes Meniere‘s disease (auditory nerve vertigo), gastric disturbances, delirium, septicaemia and necrosis of the tibia. These symptoms in humans can point us to some indications for its use in plants. Roots may be covered with white or red patches. Many pustules, pale or brown on the leaves. Septoria blotch, tan spot, ring spot, eye spot, scald and all other blotches and mosaic viruses may improve under *Sal-ac*. regardless of plant species.
Hydroponic testing has been underway since 1992, by Malany, Klessig, Pierpoint and Vernooy et, al. Their results show only crop resistance, through “inoculation”. They do not signify cures. From these results, inference may be drawn as to the cures effected. *Sal-ac*. as a remedy, being homeopathic, is different from the crude form used during the tests and will prove to be less aggressive and thus may take longer to produce results in provings. Plants have their own immune system. *Sal-ac*. also affects other plant processes.

Foliar application has been shown to speed up and increase flowering, adventitious root initiation and fruit yield. It increases absorption of potassium and reduces germination of lettuce seed.

Salicylic acid forms an important part of the immune system of plants. Without it, the plant can do little to fight off diseases or pests. When plants are invaded by a pathogen, a number of responses may be induced in the area surrounding the infection. These responses include rapid cell death, to prevent the spread of the disease, while healthy cell walls are strengthened and antimicrobial agents are released. The unaffected parts develop more resistance to further infections by either viral, bacterial or fungal pathogens. This mode of resistance is termed systemic acquired resistance. These mechanisms have been recognised since the early part of this century, but little is known about how this response occurs. There must evidently be some messenger substance that provokes the healthy cells to action. Salicylic acid has been suggested as a component.

Salicylic acid is not the translocated signal, but is required in signal transduction. From the analogy of how vaccination works in humans, there are now voices that demand “plant vaccination”. However, as the saying goes “if it is not broken, don’t fix it”. In an infected leaf, salicylic acid accumulates at the site of infection. When salicylic acid is not available to plants, the systemic acquired resistance does not work. In addition, when *Sal-ac*. has been given, it shows increased resistance. Most research has concentrated on tobacco mosaic virus.

Only a small number of diseases and crops have been studied. Further testing is certainly warranted, but in this case with potencies of *Nat-sal*. and *Sal-ac*., considered under a separate heading in this book.

Clinical

Potato virus. Tobacco mosaic virus, mosaic virus, blue mould anthracnose (Fig. 103, 104), downy mildew, angular leaf spot, *Pseudomonas* infections.

Fig. 103 Anthracnose, *Colletotrichum* spp., asexual spore

Fig. 104 Asexual anthracnose, *Colletotrichum* spp., symptoms

Appearance

Several different viruses cause mosaic symptoms on potatoes and other related plants. These are referred to as potato virus X, A and Y. Symptoms vary from a light mottling of yellow and green on the leaves, to yellow spots or crinkling of leaf tissue. Sometimes veins may blacken and plants die early. For more information about mosaic viruses, see “Diseases of Vegetables”.

Relationship

Compare: *Nat-sal.*, *Lac-ac*.

E. Allium cepa

Common red onion. *Liliaceae*. Tincture of the onion, or of the whole fresh plant. Gathered from July to August.

General (See also Chapter 9)

Allium will cure inflammations and increased secretions as in apple scab, downy and powdery mildews. Wounds, after damage, that do not heal. Not to be used on beans and peas, as it inhibits their growth. This is confirmed in the potencies.

The roots of the plants have a bad smell. The plants are thirsty and seem to crave nutrients and fertiliser. Evaporation is increased or totally absent. Photosynthesis is impaired, respiration is diminished (use an oxygen meter at night to check), consequent development of mildews. Gangrenous spots.

Clinical

Gangrene, apple scab (Fig. 105, 106), downy and powdery mildew on gooseberries and cucumbers. Respiratory problems. No uptake of nutrients. Onion is a good companion to carrots. Late blight on tomatoes and potatoes (Fig. 107). Brown rot stone fruit.

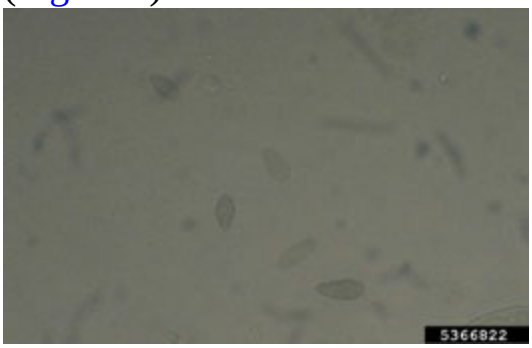

Fig. 105 Apple scab, *Venturia inaequalis*, asexual spore

Fig. 106 Apple scab, *Venturia inaequalis*

Fig. 107 Late blight, *Phytophthora infestans*, symptoms

Appearance
Leaves droop, covered in mildews. Fruits may also be affected.
Water needs
High.
Warning
Do not use on antagonistic plants such as beans and peas! Only companion plants should be treated, as nothing is known about its effects on other plants.

Treatment of Grapevines (*Vitaceae*)

A. Hyssopus officinalis
Family: *Labiatae/Lamiaceae*. Tincture of the whole plant.
General
Hyssopus is described in detail in Chapter 9. It is important for viticulture that it can heal bacterial disease both as a companion plant and as a decoction.
Clinical
Bacterial rots, blights. Respiratory problems. Best action in viticulture. (Fig. 108)

Fig. 108 Black rot, *Guignardia bidwellii*, symptoms

Valeriana officinalis
Valerian. Family: *Valerianaceae*. Tincture of fresh root.
General
Valerian is often found near ditches and streams, hence its use for waterlogged soil. While *Samb*. cures waterlogging in the leaves of plants, here the soil is waterlogged, giving rise to the associated problems. *Valer*. has a peculiar kind of smell that repels insects on man, plant and animal.

Roots have a blistery appearance. The blisters are whitish. The plant takes up nutrients well, but seems not to thrive. Protein content is low, photosynthesis impaired. Uptake of CO_2 is diminished due to clogging of the pores in the epidermis of the leaves. Evaporation is increased. The flowers may come too early or be incompletely developed. *Valeriana* stimulates phosphorus activity. It attracts earthworms. It can be used on all plants.
The plant feels better in windy weather, rather than in still conditions. The leaves show rust patches, confluent rather than isolated, as from banana rust thrips. Alternatively, there may be moulds, shiny moulds in particular.

Clinical

Slimy mould, moulds in general.

Flowers and fruits

Flowers very early, sometimes incomplete development.

Water needs

High, due to high evaporation rate.

Relationship

Compare: *Bomb-pr.*, *Samb.*, *Vib*.

Research for this chapter with regard to descriptions of bacterial, fungi, and viruses comes from various agricultural departments in universities, from their generous publications that are available to the general public. In particular, the College of Agricultural, Consumer and Environment Sciences at New Mexico State University has a wealth of information for gardeners and agriculturalists.

12. Injuries

Arnica montana

Leopard's bane. *Asteraceae/Compositae*. Tincture of whole fresh plant.

A. General

Grows in the Alps and other mountainous areas.

Arnica is a first aid remedy par excellence; trauma in all forms and varieties, pests, pruning, transplants and mechanical injury will be cured by *Arnica* as by no other remedy (Fig. 109). *Arnica* should not be sprayed onto open wounds as it will cause inflammation and suppuration. *Arnica* has been used extensively for the above-mentioned indications with good results.

Fig. 109 Transplant shock, planting

Tumours on trees as a result of incorrect pruning, even cancerous growths, can be healed, provided they are the result of some form of injury. Pruning wounds that ooze sap. Root damage after transplants, after hail, when damaged leaves become yellow, or red as in deciduous trees in autumn.

B. Clinical

After transplants or pruning (Fig. 110). Also after herbicide damage. Do not use on open wounds. Plants both transplanted and pruned cannot be given

Arnica - these should instead be treated with *Calendula* (see *Calendula*).

Fig. 110 Damage caused by pruning

C. Appearance

Wilting after transplants, due to root damage; mist *Arnica* onto the leaves. Weeping wounds after pruning. Water *Arnica* in on the roots. Rotting grafts, tumours on old wounds, especially on large trees where large limbs leave big scars. Scar tissue soft and spongy with rotting pulp underneath. Swellings hot, hard, shiny, red, bluish or yellow spots. Yellow spots caused by bruises or disease, eruption of small raised spots as in yellow rust.

D. Water needs

Thirsty when wilting from transplants. Otherwise little more than normal.

E. Relationship

Compare: *Calen.*, *Ferr.*, *Carbo-v.*

Calendula

Marigold. *Calendula officinalis*. *Compositae*. Tincture of the flowers; tincture of the whole plant

A. General

What *Arnica* is to trauma, *Calendula* is to open wounds. Where *Arnica* is of little or no use, or even dangerous to plants, *Calendula* comes to the rescue. It belongs in the same order of *Compositae* as *Arnica*. Lacerated and ulcerating wounds such as those found on roots that have been ripped or cut during transplants. *Calendula* will be of great help here, as confirmed in the field tests.

Calendula is antiseptic and restores vitality to the injured parts. It stops the entry of external opportunistic infections, as well as the proliferation of internal dormant viruses, but only in wounded plants. Nematodes cause these types of wounds. *Calendula* proved to be effective.

Arnica irritates, whilst *Calendula* soothes. Suitable for all cases where skin or

bark is broken. Flowers of marigolds close when dark clouds pass overhead, therefore affected plants are usually worse in cloudy weather and during cold winter nights, which may be the cause of ulceration of pruning wounds or broken roots.

Calendula contains a large proportion of nitrogen and phosphoric acid, a possible explanation for its healing powers. Both substances can cause severe suppuration and also cure it. Nitrogen is tissue building in plants, whilst phosphoric acid helps the metabolism, accelerating it as needed in affected areas. After a cutting is made, it is advisable to dip it in a *Calendula* solution to speed recovery and root growth. The moon calendar is an invaluable help in determining the best time for striking from shoots and cuttings (see *Nit-ac*. and *Phos*.).

Calendula in pest control has some properties worth considering: it repels asparagus beetle and does a lot of good in turf. Especially on bowling clubs' turf, with its unnatural environment, it discourages nematodes. The other varieties, such as *Tagetes patula* and *T. erecta*, are highly regarded as natural nematicides. From the effects of "teas", as in biodynamic preparations, plenty of information has already been collated to warrant the use of homeopathic preparations.

B. Clinical

Transplants (Fig. 111), pruning, storms, or mechanical damage. Asparagus beetle, nematodes.

Fig. 111 Transplant shock, damage

C. Appearance

Slightly or severely wilted after transplants.

D. Water needs

Low or normal, especially when striking cuttings, or from storm, mechanical injury, or pest damage.

In strikings or cuttings, *Calendula* will heal the wound and promote root growth. This remedy is part of the First Aid four pack[1], a kit for plants containing *Arnica*, *Carbo vegetabilis*, *Silicea* and *Calendula*. These four remedies will cover almost all problems connected with transplanting plants.

E. Relationship

Compare: *Arn*.

See also: *Nit-ac*., *Phos*.

Cantharis

Spanish fly. Order: *Coleoptera*. Trituration of live insect.

A. General

Cantharis upsets the generative sphere of the plant, causing burning. Consequently when the flowers appear burnt in hot weather, *Cantharis* is the remedy. It causes and cures an abundance of pollination from too long a

stamen, readily absorbed by female flowers. Leaves and flower petals blister in the sun, especially after misting. Plant may have a burnt appearance. Fertiliser burns. After bush fires, to speed recovery and regrowth.

B. Clinical

Sunburn (Fig. 112), blisters on leaves and petals. Fertiliser burns, water droplet burns, after bush fires, windburn. Bronze orange bug, rust chrysanthemum, pelargonium. Blister beetles on potatoes.

Fig. 112 Sunscald, damage

C. Appearance

Burnt as after bushfire. Blisters on leaves and flower petals from fertiliser, water droplets or sunburn.

D. Flowers and fruits

Flowers abundant. As a reaction to fire, the plant triggers off reproduction before it dies. Abundant pollen, good pollination. Fruits fail to mature, and drop before they set.

E. Water needs

High. Plant very thirsty. To replace sap lost in fires (*Carb-v.*).

F. Relationship

Compare: *Bomb-pr.*, *Carb-v.*

Carbo vegetabilis

Charcoal. Carbon (impure). Trituration.

A. General

Charcoal is antiseptic and deodorant, both in its crude form and potencies. Signs of decay and putrefaction are leading indications.

Carb-v. may also be much more than a rescuer of plants from a near-death

state. The carbon acts deeply on respiratory and chlorophyll cells, but except for a stunted or wilted look, does not exhibit noticeable symptoms elsewhere, save for capillary collapse, an inevitable consequence of excessive carbon intake (this finding is consistent throughout the carbons).

Carbon forms the pivot of balance in relation to the other elements. It is not the resting point, but rather the rotating point - an axis - about which the shifting equilibrium of the other elements takes place. The chemical uniformity of the carbon compounds on the one hand accounts for a one-sided and limited sphere of action, while on the other hand it accounts for the action upon all living entities and the consequent unlimited range of application.

All compounds, regardless of the elements of which they are formed, prove suitable for medicine. In plants this is of course restricted to those that play a role in plant life. Compounds usually act more slowly than pure substances, thus giving rise to a wider range of symptoms. Carbon exists in so many compounds that it can be considered the backbone in the treatment of plants and possibly in other living entities as well. Together with *Silicea*, it forms a true agricultural polychrest. Carbon is the pillar of the entire organic world, while silica is the inorganic shell that encases the carbon. Carbon compounds are the most extensive in nature, not least because carbon can combine with itself.

The relationship with *Silicea* is exquisite and extensive. Carbon is the building material and silica is the cement.

B. Clinical

Slow recovery or dying plants after transplants. After severe mutilation through storm damage or mechanical injury (Fig. 113). After rots. Decay, putrefaction, anthracnose. After loss of vital fluids. Nematodes.

Fig. 113 Incorrect pruning

C. Appearance

Wasted and wilted. Has nearly lost all leaves (though not relevant for deciduous trees in fall), looks weak, burnt from bushfires or dying from lack or excess of water. Desperate flowering (as in *Canth*.) to reproduce before dying, yet too weak to produce fruit or seed. Fruits fall prematurely. Streaks of reddish brown on the leaves, veins stand out; when a twig or leaf is broken, plant loses too much sap. *Carb-v*. was used extensively in Western Australia after transplants of blackboy or grass trees and palms, with very good results, especially on blackboy trees.

D. Flowers and fruits

Desperate flowering. Long stamen, abundant pollen. Female flowers have impaired function. Premature falling of fruit, or no fruit development.

E. Water needs

In this instance, plants have to be considered individually as water needs may be low or high; especially in trees, each situation must be assessed by individual symptoms.

F. Relationship

Compare: *Arn.*, *Calen.*
Complementary: *Sil.*

Magnesium carbonicum

Carbonate of magnesium. $MgCO_3$. Trituration.

A. General

Magnesium plays an important role in photosynthesis (see also Chapter 8). *Magnesium carbonicum* is indicated not only for lack of magnesium, but also for symptoms of burning, among others.

B. Clinical

Wilting, temperature shock, frost shock. Chlorosis, dirty yellow. Windburn, damping off.

C. Relationship

Compare: *Acon.*, *Am-m.*, *Bell.*, *Ferr-m.*, *Kali-m.*, *Nat-m.*
Inimical: *Calc.*, *Kali-c.*, *Kali-m.*, *Kali-p.*, *Kali-s.*, *Nat-c.*, *Nat-m.*, *Phos.*
Complementary: *Calc.*, *Kaliums*, *Nit-ac.*, *Phos.*, *Zinc.*
Antidoted by: *Mang.*

Silicea

Siliceous earth. Silicea terra. Silex. Silicon dioxide. SiO_2. Trituration of pure precipitated silica.

A. General (see also Chapter 8)

Silicic acid is a constituent of the cells of the connective tissue. The epidermis forms the protective sheath around the cambium where silica gives strength to the long molecules of the fibre. *Sil.* will cripple bark in healthy trees causing death. The suppuration it can set up is sufficient to destroy a plant or tree. Its indication in dieback has been confirmed in practice with remarkable results. A sapling with dieback, which had only one quarter of the bark left, which was loose and drying out, was given one dose of *Sil.* 6X and the next day, the bark was reattached to the cambium, and after one week, the top branches were growing new shoots and leaves.
On sandy soils *Silicea* works wonders and in spite of a harsh environment (or even thanks to such circumstances) *Silicea* can make plants thrive. It can be

used in soils where all appears normal, yet puny plants persist, and on any plant at sowing time, or as protection against mildew and mould, weak cells, exhaustion, fruit setting, striking, transplanting, green manure provision, all bark diseases and dieback.

B. Clinical

Dieback. Premature flowering, herbicide, germination aid, general tonic, transplant shock, soil remedy, weak straggly plants, puny growth, bark and sheath diseases, chlorosis, aphids, bud worm, citrus mite, dried fruit beetle. Weeds.

C. Relationship

Compare: *Lap-a*.
Antidote to: *Mang*.
Complementary: *Calc*.

1 available from Narayana

13. Weeds & Allelopathy

Allelopathy and its possibilities for weed control

A. History

Theophrastus (ca. 300 BC), a student of and successor to Aristotle, wrote about allelopathic reactions in his botanical works. He has been called the "father of botany", and wrote of how chickpea "exhausts" the soil and destroys weeds.

In 1 AD, Gaius Plinius Secundus, also known as Pliny the Elder, a Roman scholar and naturalist, wrote about how chickpea and barley "scorch up" cornland. He also mentioned that walnut trees are toxic to other plants.

Augustin Pyramus De Candolle, a botanist and naturalist, suggested in 1832 that soil sickness was caused by chemicals released by the crop.

And in 1907-1909, two researchers called Schreiner and Reed investigated the isolation of a number of phytotoxic chemicals from plants and soils.[1]

We might add that certain crops have always been grown together, since they protect each other. These are called companion plants and their relationships are also a form of allelopathy. While these phytotoxic chemicals act in an inhibitory way in some cases, in other cases they act as stimulants.

B. What is allelopathy?

The word allelopathy derives from two separate words: "allelon" means "of each other", and "pathos" means "to suffer". Allelopathy refers to the chemical inhibition of one species by another. The "inhibitory" chemical is released into the environment where it affects the development and growth of neighbouring plants.[1]

The term allelopathy refers to the production, by a plant, of chemicals (allelochemicals) which can influence the growth and development of another plant. Such an effect can be varied and can be negative (e.g. reduced germination) or positive (e.g. increased growth). For weed management, we are interested in the inhibition of one plant (the weed or weeds) by another (usually the crop) through the production of allelochemicals. These allelochemicals may be actively produced by a growing plant or arise from the residues after death. The effects of the allelochemicals may be reduced or enhanced by microorganisms.[2]

Allelopathic chemicals can be present in any part of the plant. They can be found in leaves, flowers, roots, fruits or stems. They can also be found in the surrounding soil. Target species are affected by these toxins in many different ways. The toxic chemicals may inhibit shoot/root growth, they may inhibit nutrient uptake, or they may attack a naturally occurring symbiotic relationship thereby destroying the plant's usable source of a nutrient.[1]

C. Are all plants allelopathic?

Not all plants have allelopathic tendencies. Although they exhibit these tendencies, some may actually be displaying aggressive competition of a non-chemical form. Much of the controversy surrounding allelopathy is in trying to distinguish the type of competition being displayed. In general, if it is of a chemical nature, then the plant is considered allelopathic. There have been some recent links to plant allelotoxins directed at animals, but data is scarce.[1]

D. Environmental impact

Allelopathy is a form of chemical competition. The allelopathic plant is competing through "interference" chemicals. Competition, by definition, takes one of two forms – exploitation or interference.

Competition is used by both plants and animals to ensure a place in nature. Plants will compete for sunlight, water and nutrients and, like animals, for territory. Competition, like parasitism, disease, and predation, influences the distribution and number of organisms in an ecosystem. The interactions of ecosystems define an environment.

When organisms compete with one another, they create the potential for resource limitations and possible extinctions. Allelopathic plants prevent other plants from using the available resources and thus influence the evolution and distribution of other species. One might say that allelopathic plants control the environments in which they live.[1]

Assuming this is true, it directly points to conscious content in plants and a corresponding mentality. Evidently, without consciousness and mentality there is no possibility of control, let alone of the environment. In the same manner, we see that related plants always seek each other. This is also due to consciousness, rather than ascribing everything to the allelochemicals. After all, these cannot develop if the right type of conscious mentality is not present. Competition is impossible without consciousness and mentality, just

as stimulation and cooperation depend on similarities in conscious mentality. Development always goes from the subtle to the gross, since the inner qualities are reflected in external properties. What is not present in consciousness has no chance of developing, since the trigger for its development is absent. The best example is disease as an expression of conscious mentality and emotion. One who is happy and contented will not get sick, while his sad, scared or angry neighbour is bound to become sick, simply because he lacks peace of mind.

Therefore, it is evident that control of the environment through inhibitory or stimulating chemicals is a conscious effort. Naturally, we can make use of these properties to further our own ends in growing crops. We can see that those who think mechanistically immediately want to use these allelochemicals to make expensive products, which by the very size of the dose will trigger new problems. The hope is to overcome resistance by using “natural” substances. These people's ignorance of the significance of the dose ensures that these products will create resistance.

Elsewhere we speak extensively about resistance and the size of the dose. Here we will say only that large doses always suppress, while the extremely small dose will stimulate. Since stimulation is the desired goal to achieve the fastest and most permanent result, it is evident that large doses can never achieve this, but must achieve the opposite.

While using natural substances is in itself a sound principle, the manner in which they are used must be part of the equation. In homeopathy, the doses are always extremely small, to the point of being almost negligible. Proponents of the orthodox line of thought call our micro-doses placebo, since such minute or even absent energies cannot possibly be effective, to their mechanistic way of thinking.

This is the general idea, which is sound in its notions. What works between plants due to their allelopathic properties must therefore also work in homeopathic potencies, since the similia principle cannot but produce the same in whichever form it is applied. Naturally we need to look out for crops that have these traits. We discover that grains inhibit their own growth when the straw is left on the land. We also discover that this is nature’s way of telling the farmer not to grow the same crop twice in succession. Nature has developed a built-in inhibitor aimed at preventing the farmer from exhausting the land. If he plants potatoes, these will be stimulated by that same straw,

while it inhibits the emergence of weeds.

E. Which crops show allelopathic properties?

Many crops have been reported as showing allelopathic properties at one time or another and farmers report that some crops such as oats seem to clean fields of weeds better than others. The list includes: wheat, barley, oats, cereal rye, brassicas, red clover, yellow sweet clover, trefoil, vetch, buckwheat, lucerne, rice and sorghum.[2]

We can instantly see that these are remedies from the *Gramineae* and the *Brassicaceae* families, which can be effective in the suppression of weeds. Without the need to grow these crops to obtain the allelopathic effects, these remedies are applicable and effective, regardless of which crop is grown afterwards. While restraint must be applied in the repetition of growing many types of grains on the same piece of land in succession, these same grains provide the stimulus for the successive crop.

The remedy will immediately act on the weeds just germinated and on the seeds, preventing their development. After 24 hours, all residues of the remedy have been destroyed by UV or been absorbed by the seeds and weeds. Now it is immediately safe to grow the desired crop on the clean piece of land, on which sufficient green manure will keep the fungi, bacteria and viruses busy. The drawbacks of having to grow what has the allelopathic properties are at once removed by the use of the potencies. It is only interesting for the rice-grower, since he must plant in the same piece of ground time and again. How this is done is explained in Furuoka's book “The One-Straw Revolution”.

The drawbacks are listed below. They include such things as differences in strength, specificity against particular weeds only, or even suppressing its own germination. The latter is to the farmer's long-term advantage, since it makes sure he does not exhaust the land. Modern farming methods remove everything from the land, apparently removing the restrictions nature herself has put in place and making it possible to grow more than one crop of grains on the same piece of land. This will exhaust the soil and make the growing of other crops afterwards a problematic endeavour.

F. What other factors might need to be taken into account?

Before using allelopathy in weed management programmes there are a number of other factors that might be important in any given situation.

Varieties

There can be a great deal of difference in the strength of allelopathic effects between different crop varieties.

Specificity

There is a significant degree of specificity in allelopathic effects. Thus, a crop which is strongly allelopathic against one weed may show little or no effect against another.

Autotoxicity

Allelopathic chemicals may suppress not only the growth of other plant species, they can also suppress the germination or growth of seeds and plants of the same species. Lucerne is particularly well known for this and has been well researched. The toxic effect of wheat straw on following wheat crops is also well known.

Crop-on-crop effects

Residues from allelopathic crops can hinder germination and growth of following crops as well as weeds. A sufficient gap must be left before the following crop is sown. Larger seeded crops are affected less and transplants are not affected.

Environmental factors

Several factors impact on the strength of the allelopathic effect. These include pests and disease and especially soil fertility. Low fertility increases the production of allelochemicals. After incorporation the alleopathic effect declines fastest in warm wet conditions and slowest in cold wet conditions.[2]

These are the reasons farmers used crop rotation. Not only does the soil become exhausted, it is also “poisoned” by the allelopathic chemicals that are released by plants. Therefore, a certain crop could be grown for some time, but its allelochemicals prohibited the excessive use of land for monocultures of the same crops. The apparent ability of chemical fertilisers to overcome these drawbacks is not the case in practice.

Such allelopathic effects are present in the plant, but both unknown and non-existent with homeopathic remedies, since these act specifically and for an extended time only on seeds that have absorbed the remedies. They leave no residues and are therefore not effective on the following crop, which can at all times safely be grown.

Allelopathic chemicals have their own drawbacks when used in their crude form. Homeopathic potencies do not suffer from these drawbacks. There is

no autotoxicity and there are no crop-on-crop effects and no environmental factors to take into consideration in their use. There may be considerations of strength but these are superfluous, since all allelopathic chemicals are potentised before being used. This removes all considerations of strength, since they are no longer applicable. Specificity is often wanted, simply because the weeds that do grow with certain crops are adapted also to the allelopathic relations existing between weed and crop.

G. Allelopathic weeds?

Several weed species have been reported to show allelopathic properties. They include couch grass, creeping thistle and chickweed. Where they occur together they may have a synergistic negative effect on crops.[2]

This in itself is not a problem, provided an effective remedy can be found to eradicate these.

H. What are the effects of allelopathy?

Allelopathic effects can include poor germination, impaired root growth and stunted shoot growth. Obviously these symptoms can also have other causes apart from allelopathy and in practice it can often be difficult to distinguish true allelopathic effects.[2]

However, when made in potency, these allelopathic effects can be proved to exist or not. From what has been studied so far, confirmation of the allelopathic effects is more often achieved than not.

I. Is it important?

Because it is difficult to separate the effects of competition (e.g. for light, water and/or nutrients) from allelopathic effects in the field, some researchers doubt the importance of allelopathy in practical terms. For day-to-day crop management it is of less importance whether a weed-suppressing effect is due to allelopathy or not. This distinction will however be important in developing a successful research programme.[2]

As already explained above, the use of these plants as remedies will reveal the truth of the assumptions surrounding this fascinating subject. It certainly deserves to be explored and experimented with.

J. What practical use is allelopathy?

As outlined in the previous section, there are many potential problems with attempting to use allelopathy as a practical tool for weed management in organic farming systems. In particular:

- *Information about which crops are effective against which weeds is limited.*
- *Information about which are the most allelopathic varieties of a particular crop is not available.*

To provide maximum weed suppression, allelopathic crops need to be managed effectively, but there are no effective management recommendations, which in any case will vary from one crop to another.[2]

K. Where does this leave us?

Current evidence indicates that the role of allelopathy in weed suppression in both field and cover crops is at best uncertain. It is probably safe to say that at the present time we are not in a position to provide practical advice for the use of allelopathic effects in weed management programmes.[2]

While for orthodox thinking the uncertainties and the difficulties seem insurmountable, homeopathy offers a cheap and easy testing method, which is safe and environmentally friendly. The crops can be grown and potentised and tried out immediately in the shortest possible time. Those that show promising results can be tested further, while those that show no effects can be discarded immediately. In this way, a range of specific remedies for specific weeds can be developed, making treatment more individualised and thus also more effective.

L. Where do we go now - weed management?

Cover crops can provide effective weed control, whether allelopathic or not. Choose vigorous species and varieties for maximum weed control, but remember timeliness of establishment is vital, especially for winter cover crops.

Cash crops vary in their weed-suppressing abilities. Choose strongly suppressive crops such as potatoes and oats in the rotation to balance weakly suppressive ones such as leeks and carrots.

Crop varieties vary slightly in their weed suppressing ability: be aware of this and make use of it where appropriate. When using a crop, especially a green manure, which may be alleopathic, leave a gap after incorporation before planting the next, especially with small seeded crops.[2]

While such cultivation measures have their use, they are often only viable for

home gardeners, or large-scale farmers, who have the option to rotate crops. A tomato grower will need something different from the grower who grows potatoes one year and beans the next. With homeopathic remedies to do the work without the drawbacks, even for the monoculture farmer who grows the same crop year after year, the same crop can benefit, without having to worry too much.

M. Where do we go now - research?

Research is ongoing to identify allelopathic effects and to identify the genes responsible for allelopathy. In time this should lead to recommendations for using allelopathy in weed management and to breeding for varieties with stronger allelopathic properties. In this project we are collecting information on allelopathy and hope to be able to at least provide guidance on which crops and varieties are likely to be allelopathic, and against which weeds.[2]

N. Current results

Examples of allelopathy from published research

Allelopathic plant impact

Rows of black walnut interplanted with corn in an alley cropping system reduced corn yield attributed to production of juglone, an allelopathic compound from black walnut, found 4.25 meters from trees.

Rows of leucaena interplanted with crops in an alley cropping system reduced the yield of wheat and turmeric but increased the yield of maize and rice.

Lantana, a perennial woody weed pest in Florida citrus: Lantana roots and shoots incorporated into soil reduced germination and growth of milkweed vine, another weed.

Sour orange, a widely used citrus rootstock in the past, now avoided because of susceptibility to citrus tristeza virus:

Leaf extracts and volatile compounds inhibited seed germination and root growth of pigweed, bermudagrass and lambsquarters.

Red maple, swamp chestnut oak, sweet bay, and red cedar: Preliminary reports indicate that wood extracts inhibit lettuce seed as much as or more than black walnut extracts.

Eucalyptus and neem trees: A spatial allelopathic relationship if wheat was grown within 5 m.